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SPECIAL WEAPONS OF THE SECOND WORLD WAR

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The book describes for the first time used in 1939-1945. combat systems designed to carry out special missions - sabotage and reconnaissance operations, ramming and assault attacks, transportation of special cargoes and agents of special services. The authors give brief information about the history of the development of a unique weapon, provide characteristics, as well as information about the operations in which it was used.

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SPECIAL WEAPONS OF THE SECOND WORLD WAR

INTRODUCTION

In the book “Special Weapons of the Second World War”, which is brought to the attention of readers, for the first time, the weapons used in 1939-1945 are described in full. military means intended for carrying out special missions: sabotage and reconnaissance operations, ramming and assault attacks, transportation of special cargoes, delivery of intelligence agents, etc.

Air ramming was systematically used by both belligerents, and special ramming fighters were even developed for this purpose. At the end of the war, ram attacks in Japanese aviation were planned by the high command and considered as an element of

On the islands of Japan, German aviation planned Operation Werewolf, within the framework of which it was supposed to carry out massive ram attacks by German pilots of the Allied bomber aviation formations. A large number of projectiles were developed, including manned ones, intended for the destruction of large land and sea targets. Aircraft for submarines were developed, as well as gliders for special purposes (fighters, bombers and landing cargo). The Japanese used bomber balloons to bombard the US coast.

In the navies of England, Italy and Germany, man-guided torpedoes were used for sabotage purposes, and in the Japanese navy they were also used for suicide attacks.

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The fleets were armed with ultra-small submarines, which specialized

on attacks of enemy ships in well-defended harbors, and were also used for reconnaissance, sabotage operations and coastline defense. Flying submarines, submarines delivered to the attack area with the help of a carrier aircraft, as well as vehicles that were a hybrid of a midget submarine and a torpedo boat, were developed. Exploding boats, diving boats, canoes and kayaks were used to carry out assault and sabotage operations.

The ground forces of the belligerents used such exotic weapons systems as remotely controlled tanks (teletanks) and self-propelled torpedoes, intended to destroy long-term defensive structures, destroy enemy heavy tanks, undermine bridges and other structures when it was impossible to use sappers for this , destruction of enemy manpower, degassing of the area and setting smoke for weight. For the first time, data on the Kazantsev electric torpedo are presented, the history of its creation and the combat missions that were set for Soviet special forces armed with vehicles of this type are given, the combat use and results of the combat operations of electric torpedoes are described.

The projects of heavy and super-heavy armored vehicles are described, including giant (weighing over 1000 tons) tanks, which, according to the plan of the developers, were to become mobile means of reinforcing long-term defensive lines to cover possible gaps between strong points in accordance with the changing situation. Information is given about the creation of flying tanks, which, as was believed in the pre-war period, would certainly be used in one form or another in the conditions of the deteriorating situation in the world.

The most fantastic were the projects of underground combat systems, which were supposed to pave passages for their tanks in the front lines of the enemy, and would also be used to secretly penetrate enemy territory and destroy important objects.

In addition to ultra-long-range railway guns, which were used for concentrated fire support during the offensive of troops, as well as for the defense of coastlines, special types of guns were developed:

sonic, vortex, pneumatic, solar and electric.

For agents of the special services, special shooting devices were developed and manufactured - pens and pencils, cigarettes, cigars and pipes, buckles, etc., and for assault squads - devices for firing at various angles from behind shelters.

In the last years of the war, the Japanese command systematically used suicide bombers as special weapons: paratroopers, pilots of aircraft and gliders in aviation, drivers of torpedoes, boats and midget submarines, divers and swimmers in the navy, destroyers tank bodies - warmia.

The combat use of various animals is described, among which were dogs - tank destroyers, dogs - companions of snipers, pigeons-pigeons, pigeons-pigeons of missiles, bats: for bombardment with incendiary bombs, etc.

Brief information about the history of the emergence of various types of special weapons and the reasons for their use is given. The characteristics of unusual combat systems are given, as well as information about the combat operations in which they were used. The book, supplied with a large number of photographs, color illustrations and diagrams, is intended for a wide range of readers.

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1. AIR RAMS

The Aviation Encyclopedia defines an air ram as one of the methods of conducting air combat, which consists in striking an enemy aircraft with a propeller or wing (after the ammunition is used up). In the West, it is generally accepted that this unusual method of combat was developed at the very beginning of World War II by Soviet pilots in conditions when German aviation had a great advantage over Soviet aviation. Indeed, with the improvement of Soviet aircraft, the ram began to be used less and less, which is confirmed by statistics: if Soviet pilots in 1941 made 188 rams, then in 1944 only 60. Nevertheless, Soviet pilots used the ram as a way to attacks until the very end of the war.

However, the battering ram was by no means an invention of the Second World War. Even at the dawn of the development of aviation, people were already thinking about the possibility of using an air ram. One of the first who theoretically substantiated this possibility was N.A. Yatsuk, who in 1911 published an article stating that the airplane itself is also a weapon. Along with predicting the appearance of cannons, machine guns and bombs on aircraft, he wrote: “It is possible that in exceptional cases pilots will decide to ram someone else’s airplanes with their airplanes.” At the First All-Russian Aeronautical Congress in April 1911, he made two reports. Lieutenant P.N. It was then that Nesterov first heard about the air ram, and later he and Yatsuk became friends.

Petr Nikolaevich Nesterov was born on February 27, 1887 in Nizhny Novgorod in a military family. Called into the artillery in 1906, he began serving as an observer in a balloon. detachment in Vladivostok, where he became interested in aeronautics. In 1909, he developed his first draft of an aircraft with a Y-tail, which, however, was not accepted for construction, and in 1911 flew for the first time on a plane.

· Nere own design. In October 1912, he received the rank of military pilot after graduating from the Gatchina aviation school and was assigned to the air squadron under the 7th aeronautical company.

In May 1913, Nesterov was appointed acting head of the 11th corps squadron of the 3rd aviation company (Kyiv). While honing his flying skills, he often experimented in flight, performing various aerobatic maneuvers, including a steep banked turn, which was then considered a violation of flight instructions. September 8, 1913 Nesterov for the first time in the world performed a vertical loop, for which he was arrested for 10 days.

The beginning of the First World War P.N. Nesterov met in the position of commander of the 11th Corps Squadron of the 3rd Army of the Southwestern Front. The main task of the detachment was to carry out aerial reconnaissance, however, Staff Captain Nesterov was persistently engaged in the development of air combat tactics, as well as a number of technical devices necessary in battle. According to some aviation historians, August 25, 1914. he carried out the first bombing attack in Russia, during which his observer dropped grenades on the Austrian troops.

Nesterov held his last air battle in his life on August 26 (September 8, according to a new style), 1914, 6 km from the city of Zholkev (now the city of Nesterov, Lviv region). The archives contain the "Act of the investigation into the circumstances of the heroic death of the head of the 11th Corps Aviation Detachment, Staff Captain Nesterov." Here is what, in particular, it was written:

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“3. The decision to ram and shoot down enemy air vehicles was born by Staff Captain Nesterov a long time ago. So, in the city of Dubno, on August 5-6, he adapted a knife to the rear limb of the fuselage, with which he

intended to cut the shell of an enemy airship. During his stay in Zlochev, he decided to adapt a long cable with a load to the tail of the apparatus, with which he hoped to confuse the propeller of an enemy airplane, flying in front of its nose.

4. The comrades of the deceased repeatedly pointed out the danger of such actions to him, insisting that when hit in the air, the ramming apparatus must necessarily break, to which Staff Captain Nesterov replied that this had not yet been proven, and, finally, even if the apparatus breaks down, it does not mean anything, because anyway, one day you will have to break up, and it is the duty of every warrior to sacrifice oneself.

5. On August 26, Staff Captain Nesterov rose twice to pursue the enemy apparatus: during the first rise, it was not possible to catch up with the enemy apparatus; office, ordering them to warn themselves if an enemy apparatus appears. Soon the same apparatus reappeared; Staff Captain Nesterov went to the airfield by car, hurriedly boarded his two-seat apparatus of the Moran-Saulnier system, as the single-seat one crashed; getting into the apparatus, he was in such a hurry that he did not even become attached to it. To the words of Lieutenant Kovanko: “What are you going to do, take at least a Browning,” Staff Captain Nesterov replied: “Nothing, I’ll manage somehow.”

6. Staff Captain Nesterov quickly gained height and overtook the enemy apparatus 3'/, versts (north-west of the village of Lipina) at 12 o'clock. 5 minutes. day. Here, being significantly higher than the enemy car, he glided at it, apparently with the aim of knocking it down with its wheels.

7. Due to the difficulty of taking into account the forward speed of both machines, the apparatus of staff captain Nesterov did not hit the Austrian airplane with its wheels, but crashed with the engine between the two bearing surfaces of the biplane. This is evidenced by: a) a completely broken Moran screw, b) the outer cover of the Bowden flexible shaft from the revolution counter wrapped around a fragment of the same screw, c) a shaft breakage, separation of the motor from the device and its separate fall to the ground 130 meters from the first .

8. Based on the nature of the fall of Staff Captain Nesterov's Moran — in a spiral — one can conclude that the wings of such aircraft remained intact in the first moment after the collision, and if they sagged, then only slightly.

9. Staff Captain Nesterov flew out of the apparatus and fell to the ground separately from the vehicle, about 25 meters from it; the moment of its separation from the apparatus could not be established; there are indications that it took off at the very moment of the collision of the vehicles, but some show that this happened much later than the specified point.

10. Inspection of the wreckage of the Moran indicates that the chassis bent or broke already in the air, the lower cables weakened, and at the moment it touched the ground, the device folded so that the ends of the wings looked in one direction.

From all of the foregoing, it must be concluded that Staff Captain Nesterov deliberately, disregarding personal danger, deliberately got up, overtook and hit the enemy apparatus with his own machine, that from the force of the collision, Staff Captain Nesterov’s own apparatus was so damaged that Staff Captain Nesterov went down could not on it, was thrown out of the apparatus during one of the sharp movements of the latter and died, crashed on
earth."

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During the First World War, Russian pilots made three ram attacks. In 1916, an English pilot also made his first ram, he was Lieutenant Leslie Forbes from the 27th Squadron of the Royal Flying Corps. On the morning of September 23, 1916, he took off with six C.100s on patrol between Bapaume and Cambres. In the patrol area, the British met a group of German Albatrosses, with whom they started a fight. Forbes used up all the ammunition in battle, after which he decided to go for a ram. With the wing of his fighter, he struck at the Albatross. A German airplane crashed to the ground near Noreil, the pilot was killed. Forbes managed to reach the airfield of the 24th squadron in Bertanley on a damaged plane, but during landing he hit a tree and crashed the plane. With severe injuries, Forbes was taken to the hospital. In his report, he wrote that he deliberately went to the ram. Subsequently, L. Forbes became a Marshal of the Royal Air Force.

In 1924, Yatsuk published a work on the tactics of military aviation, in which, in particular, he expressed the following idea about

air ramming: "Such a technique will remain in the tactics of air combat as the hero's last resort ... a maneuver that marks the threat of ramming is a strong means of moral influence on the enemy." According to this tactic, the attacking pilot must strike the enemy aircraft at a vital point with the wingtip of his own aircraft or with the propeller of the engine to cut off the tail surfaces. Although this tactic was often fatal to the attacker himself, with skill and luck, the pilot could survive with only damage to his aircraft, or even return and land on his own airfield.

Methods of ramming continued to be developed in the 1930s. For example, one of the first rams during the Spanish Civil War was made by the German Oskar Henrici, who was sent there in the fall of 1936 as part of the Condor Legion. On October 19, 1936, Lieutenant O. Henrici, as part of five Heinkel He 51 aircraft, flew out to intercept a group of republican bombers. During the attack, Heinrici ran out of ammunition, then he decided to go for a ram. With the landing gear of his aircraft, he hit the upper wing of the bomber, which immediately collapsed to the ground. Heinrici landed safely at his airfield.

In 1937, one of the first two rams in the world was made by the Soviet pilot I.E. Fedorov - on June 18 over Madrid, and on July 21 over Guadalajara. On the night of October 25 of the same year in Spain, Lieutenant E.N. Stepanov destroyed a 5.M.81 bomber with a ram, becoming the first pilot in the world to make a night ram.

At dawn on January 17, 1938, the Spaniard Manuel Orozco, as part of a flight of I-15 fighters of the Republicans, flew out for reconnaissance in the area of \u200b\u200bthe city of Teruel. When returning from a mission, they were attacked by a group of fascist fighters "Messerschmitt" BE 1098. Orozco's plane received numerous damage during the battle, but the pilot managed to throw his fighter at one of the German planes and hit him with the right console of the lower wing. The German plane, which had lost control, fell to the ground, and Orozco, with difficulty holding his damaged fighter, brought him to the airfield and landed. In August 1938, Orosco was sent to the USSR for higher command courses,

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During the Great Patriotic War, he fought in the air defense aviation, repelling raids by German bombers, and was considered one of the best specialists in night combat tactics.

On May 31, 1938, Captain A. Gubenko used up all the ammunition in a battle over the city of Hankou (China), after which he cut off the aileron of the Japanese A5M2 fighter with the propeller of his I-16 aircraft and landed safely. For this feat, Gubenko was awarded the Golden Order of the Republic of China. As for the Japanese pilot, he was able to land the crippled car on his

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airfield, for which he was declared a hero who saved a rammed plane. In Japan, Gubenko's dogfight was studied in every detail.

Rams were also used by Chinese pilots in battles with the Japanese. For example, on February 18, 1938, a pilot of the 22nd squadron of the Chinese Air Force, Wu Dingchen, rammed a Japanese aircraft in an I-15 fighter jet over the city of Hankou, after which he landed on a parachute.

Soviet pilots at Khalkhin Gol repeatedly deliberately used an air ram. At least four of them destroyed enemy aircraft using this technique. For example, on June 20, 1939, during a fierce air battle, Lieutenant V.F. Skobarihin saw that two Japanese fighters attacked his friend's plane. There was no time to think, and the brave pilot went on a frontal attack. The Japanese could not stand it and at the very last moment tried to soar up. The I-16 propeller ripped open the Japanese fighter, which exploded in the air. Skobarihin hardly managed to land his plane damaged by the ramming.

During the fighting at Khalkhin Gol on June 22, 1939, for the first time among Japanese pilots, junior lieutenant S. Saito used a ram on his fighter.

During an air battle with six I-16s by a blow from the wing of ” he cut off part of the tail a Soviet fighter. Saito managed to land his damaged plane. A month later, he tried to ram another I-16, for which he received the nickname King of Rams in the Japanese army aviation.

The air ram became a truly mass phenomenon during the Great Patriotic War. According to Major General of Aviation A.D. Zaitsev, in 1941-1945. Soviet Air Force pilots made 636 air rams, in

as a result of which enemy aircraft lost more than 1,500 flight personnel. The air ram was not provided for by the military charter, manuals or instructions. Soviet pilots resorted to such a last resort not on orders. Here is what Chief Air Marshal A.A., twice Hero of the Soviet Union, wrote. Novikov, former Commander-in-Chief of the Air Force in 1942-1946: “Air ramming is not only lightning-fast calculation, exceptional courage and self-control. A ram in the sky is, first of all, readiness for self-sacrifice, the last test of loyalty to one's people, one's ideals. This is one of the highest forms of manifestation of that same moral factor inherent in the Soviet person, which the enemy did not take into account and could not take into account.

There is a fairly widespread opinion that ramming is some kind of fatal act of self-sacrifice. However, this is what Aleksey Tolstoy wrote in his front-line essay titled “Taran”: “A Soviet pilot never avoids a fight, and the closer the danger is to him, the angrier his heart, the more prudent his movements, the faster his reflexes.. Soviet pilots have created a new form of attack, the Nazis do not dare to use it. I'm talking about ramming the enemy in the air, on condition that not only your life is saved, but also in some cases your car. Indeed, as statistics show, approximately 37% of the pilots died during a ramming. However, 63% of the pilots not only survived, but many of them continued to fight and landed on their plane. Moreover, there are cases when pilots made two rams in one battle. Several dozen people made the so-called “double” rams, when the enemy plane could not be shot down the first time and it was necessary to finish it off with a repeated ramming.

Soviet pilots used rams on all types of aircraft: fighters, attack aircraft, bombers, reconnaissance aircraft. Ramming rams were made in group and single battles, day and night, in clear skies and clouds, at low and high altitudes, over their own territory and over enemy territory.

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One of the first night rams was carried out by Junior Lieutenant V.V. Talalikhin. On the night of August 6, 1941, he flew out on alert in an I-16 fighter to repel a German raid.

aviation to Moscow. In the area of the villages of Dobrynikhi and Shchegliyevo, Moscow Region, at an altitude of 4800 m, he discovered the He 111 bomber and went to intercept it. But the enemy turned out to be experienced, he abruptly changed course and made attempts to break away. Having shot all his ammunition, Talalikhin, wounded in the arm, decided to go for a ram. Having managed to get close to the tail of the bomber, he struck it with the propeller of his aircraft. Not 111 with a severed tail stone went down. Talalikhin managed to leave the damaged fighter and land safely by parachute. For this attack, V.V. Talalikhin was awarded the title of Hero of the Soviet Union.

Deputy squadron commander of the 926th Fighter Aviation Regiment of the 4th Air Army of the Transcaucasian Front Senior Lieutenant Ya.A. Aleksandrovich flew out on August 20, 1942 at the head of a pair of LaGG-3 fighters to escort bombers. In the area of the village of Veselovskaya, Krasnodar Territory, he entered into battle with 7 enemy fighters. From the very first attack, he shot down the BE 109, and then attacked the second one - the Messerschmitt, which was next to our bomber. It was impossible to shoot, because the bomber could also be damaged. Then Alexandrovich decided to ram the enemy. On the opposite course, he went to the Messerschmitt and in a combat turn hit with the right wing console from below one of the planes of the BE 109 wing. Having lost the plane, the enemy aircraft turned over and flew down sheer. Alexandrovich managed to keep his fighter in the air. Together with the wingman, he continued the fight until our bombers had completed their task. Then the pilot brought the damaged aircraft to his airfield and landed safely. For this feat Aleskandrovich was awarded the Order of Lenin.

On July 25, 1942, pilot O. Kilgovatov flew to intercept the German reconnaissance Focke Wulf Eu 189 in the Stalingrad area. In the battle with the cover fighters, he used up all the ammunition. In order to prevent the scout from leaving, Kilgovatov decided to go for a ram. Twice he hit him with the wing of his fighter, but the enemy continued to fly. Then he struck with a propeller, but after that the scout continued to fly. However, the fourth ramming was decisive. The crew of a German aircraft

rushed by parachute and was taken prisoner. Kilgovatov managed to bring his damaged aircraft to the airfield and land, for this feat he was awarded the Order of the Red Banner. Kilgovatov died in an air battle on April 10, 1944.

Squadron commander of the 161st Fighter Aviation Regiment of the 43rd Fighter Aviation Division (Western Front) Senior Lieutenant N.V. On the morning of July 10, 1941, Terekhin at the head of an I-16 flight flew out to repel an attack by enemy Junkers ÿi 88 bombers. During the battle, he used up all the ammunition, and in order to prevent the bomber from escaping, Terekhin decided to ram it. He managed to get close to the enemy and cut off his tail with a propeller. Since the bombers were in close formation, the falling JI 88 hit the neighboring bomber with its wing, as a result of which both enemy aircraft crashed to the ground. Terekhin landed by parachute. The crew of the downed Junkers landed nearby, while still in the air the Germans opened fire on our pilot with pistols. Terekhin continued to fight on the ground, firing back with his pistol until local collective farmers arrived at the landing site, who helped to disarm and tie up the fascists. At the command post of the division, Terekhin appeared with a pistol in his hand and with a rope with which the captured German pilots were tied. For this feat Terekhin was awarded the Order of Lenin. On July 18, 1941, in an air battle on the outskirts of Leningrad, he shot down a third enemy aircraft with a ramming attack. Major Terekhin died in an air battle on December 30, 1942.

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Pilot of the 508th Fighter Aviation Regiment, Junior Lieutenant V.P. On May 22, 1943, Mikhalev destroyed an enemy bomber by ramming in a Yak-7B in an air battle, after which he landed on his damaged aircraft. On October 20, 1943, the commander of the 3rd squadron of the same regiment, Senior Lieutenant Mikhalev, rammed the second Nazi plane in an air battle, and subsequently rammed the third plane, on July 1, 1944 he was awarded the title of Hero of the Soviet Union. After the war, he continued to serve in the Air Force, and among the first mastered a jet aircraft. He was awarded the orders of Lenin, the Red Banner, Alexander Nevsky, the Patriotic War of the 1st and 2nd degree, the Red Star, and medals.

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Senior Lieutenant A.S. Khlobystov from the 20th Guards Fighter Aviation Regiment (1st Mixed Aviation Division, Karelian Front) on April 8, 1942, in an air battle in the Murmansk region, having no time to aim, hit on the tail of a heavy fighter BE 110. He, having lost control, crashed into a hill. Then Khlobystov shot down another plane with fire from the airborne weapon. Soon, reinforcements consisting of 8 Messerschmitts approached the Germans. Having completely used up the ammunition, Khlobystov used the ram a second time, hitting the enemy aircraft with the right wing plane. On a damaged and barely controllable aircraft, he managed to reach his airfield and land safely. On May 14, 1942, Khlobystov flew out as part of a group of fighters to repel an enemy air raid on Murmansk. At the very beginning of the battle, he was wounded in the arm and leg, his plane was damaged, smoked and the engine flared up. Despite this, the pilot managed to destroy the BE 109 with a ramming blow. From the impact, Khlobystov was thrown out of the cockpit through an open canopy, however, losing consciousness, he managed to open his parachute. For his third ram A.S. Khlobystov June 6, 1942 received the title of Hero of the Soviet Union. Guard Captain A.S. Khlobystov died in an air battle on December 13, 1943.

October 29, 1941 junior lieutenant B.I. Kovzan took off on a MiG-3 aircraft to escort attack aircraft to the area of the city of Zagorsk, Moscow Region. In dogfight with four V? 109 he knocked out one of them, but at the same time used up all the ammunition. Returning to his airfield, at an altitude of 5000 m, Kovzan discovered an enemy air reconnaissance aircraft. In order not to let the smu go away, Kovzan decided to ram him. He went behind the Junkers from below and equalized the speed, then he gave gas and abruptly took the handle on himself. From the blow shook his fighter, but Kovzan managed to cope with the management. The German plane, somersaulting, went to the ground. Kovzan landed safely at his airfield. On February 22, 1942, Senior Lieutenant Kovzan rammed an enemy bomber in the Vyshny Volochok area on a Yak-1 plane. He landed on a damaged aircraft. On July 8, 1942, in the area of the village of Lobnitsy, Novgorod Region, in an air battle on the same aircraft, he carried out a third ramming, shooting down an enemy fighter. He landed on a damaged aircraft.

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On August 13, 1942, near the city of Staraya Russa, Captain Kovzan on a La-5 plane discovered a group of 7 bombers J and 88 and 6 escort fighters B # 109. Having shot down one fighter with a well-aimed burst, Kovzan rushed to the Junkers. Suddenly, the enemy burst hit the cockpit, while Kovzan was wounded in the right eye. He made an attempt to jump out with a parachute, but for this he no longer had the strength. At this time, a Junkers appeared directly in the direction of his fighter, and Kovzan directed his burning aircraft at him. Both planes fell to pieces on impact. Our pilot was thrown out of the cockpit through an open canopy. From a height of 6000 m, he fell into a swamp, and this saved his life. In the fall, he broke his left leg, arm and several ribs. It was his fourth ramming, a unique achievement in history.

aviation.

The collective farmers arrived in time to pull the pilot out of the quagmire and delivered him to the partisans, who ferried him across the front line. Kovzan spent 10 months in hospitals. After the hospital, he obtained permission to serve with one eye in fighter aviation. Until the end of the war, he shot down 6 more enemy planes, bringing his personal score to 28. After the war, he continued to serve in

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aviation, in 1954 he graduated from the Air Force Academy. B.I. Kovzan was awarded 2 Orders of Lenin, Orders of the Red Banner, Orders of the Patriotic War of the 1st degree, Orders of the Red Star, and medals.

Among the Soviet pilots who committed ramming were representatives of different nationalities: Russians, Ukrainians, Belarusians, Georgians, Jews, Armenians, Azerbaijanis, Moldavians, Poles, Tatars, Chuvashs. Ram attacks were carried out by foreign volunteer pilots who fought as part of Soviet aviation units. So, for example, the Frenchman Pierre Lauriyon from the Normandy-Niemen fighter regiment on October 17, 1944, used up all the ammunition in an air battle. In an effort not to miss the enemy, he hit the tail of the Ru 190 with the wing of his Yak-3 and shot him down. With great difficulty, the pilot managed to bring the damaged fighter to his airfield. During landing, the plane rolled over, but P. Lauriyon remained unharmed.

Spaniard Vicente Beltran emigrated to the Soviet Union after the defeat of the Republicans in the civil war. When the Great Patriotic War began, he filed

a request to send him to the front. At the end of July, he, along with other Spanish pilots, was sent to a reconnaissance aviation special group equipped with captured German aircraft, then he fought in the air defense aviation. In the summer of 1942, for one week, he twice rammed enemy German planes on the distant approaches to Moscow. After the end of the war, V. Beltran continued to serve in the air defense.

Allied airmen also carried out occasional ram attacks. One of them was Lieutenant Ripley Jones of 126 Squadron RAF. On October 17, 1942, during the defense of Malta, repelling a German raid on the Luka airfield, a JI 88A bomber rammed a Spitfire MK P fighter. From the impact, both planes fell apart in the air, but Jones managed to land by parachute.

Pilots of the Axis countries also made rams: Germans, Italians and Japanese (Japanese kamikaze will be discussed separately). Regarding the Germans, it is known that at the beginning of the war, having an advantage in the air, they did not use the ram as a method of conducting air combat. Moreover, at the beginning of the war, a circular was even sent to the Luftwaffe units, forbidding them to approach Soviet aircraft closer than 100 m, in order to avoid ramming them. However, the further course of the war made its own adjustments to the tactics of combat by the German pilots. In 1944, special groups of “hunters” appeared in the air defense of the Reich, staffed with volunteers and penalized.
Penitentiaries signed an obligation to shoot down an enemy bomber in every battle. If there was not enough ammunition, then they were obliged to go to the ram. Failure to fulfill an obligation was seen as "cowardice in the face of the enemy".

So, for example, the commander of the 4th (assault) group of the JO 3 fighter squadron, Captain V. Gert, who had 27 downed aircraft (of which 22 bombers), on November 2, 1944, in an air battle over the city of Halle on his Yem 190 was rammed by an American B-17 bomber. Gert jumped out of his crashed plane with a parachute, but the parachute did not open and the pilot died. On April 4, 1945 Major H. Ehrlich from JC 7 shot down 2 American B-17 bombers over the city of Stendal (Germany) on a Me 262 jet fighter. Tre

he rammed a ty bomber, and he himself died in the process. It was the first ram in the world carried out by a jet aircraft. A pilot from JC 2, Major K. Bulingen, defending the skies of the Reich, shot down 24 heavy bombers, 3 of them by ramming. |

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The fate of Captain G. Graf, who in November 1943 was appointed commander of the fighter squadron JC 11, which was part of the Reich's air defense, testifies to the change in the views of the Germans on an air ram. He was the first among the German aces to cross the mark of 200 air victories, after which, by special order of G. Goering, he was forbidden to participate in battles. Nevertheless, the situation for the Germans turned out to be so difficult that even such aces had to be thrown into battle. On March 24, 1944, G. Graf, together with his wingman, took off in a BE 109 fighter to intercept American bombers. In a battle with P-51 cover fighters, he managed to shoot down one of them. During another attack, he was wounded in the arm and thigh, and his aircraft was damaged. Then Graf, who had shot all the ammunition, struck a blow with his wing on the cockpit of the enemy fighter. The P-51 went into a tailspin, Graf's plane also began to fall, but he barely managed to open the canopy and jump out with a parachute. After returning from the hospital in October 1944, Graf was appointed commander of the JC 52 squadron, in this position he fought until the end of the war. In May 1945 he was captured by the Soviets, in December 1949 he returned to Germany.

In early 1945, when thousands of Allied bombers were already flying over German territory, Colonel H. Hermann put forward the idea of mass ram attacks against Allied bombers. Herrmann was considered an ace fighter in the Luftwaffe, and the appearance of night combat tactics, called the "wild boar tactics", is associated with him. He headed the unit formed as part of the preparations for Operation Werfolf (Werewolf), for the pilots of which about 2000 of the most lightweight BE 109 fighters were trained. .

Operation Werwolf took place on April 7, 1945 in the Magdeburg region, when 120 rammed Messerschmitts went up to intercept Allied bombers. In total, on this day, the Germans managed to inflict 23 ram attacks, however

the effectiveness of these strikes was low - only 8 American B-17 and B-24 bombers were shot down. The rest of the bombers, despite significant damage, managed to reach their airfields or make an emergency landing in the territories liberated from the Germans. The Germans, during this operation, lost almost all their
cars.

In Japanese aviation, since 1942, ram attacks have become a common method of air combat. So, for example, on July 4, 1942, during an air battle, Lieutenant Sumitsu's Zero fighter was shot down, but he managed to direct the car at an American bomber and destroy it with a ramming attack. During the battle near Santa Cruz Island on October 26 of the same year, O. Shigetaka, seeing that an American dive bomber was going to attack the Shokaku aircraft carrier, without hesitation, rammed and destroyed it. Kitahata Saburo, having taken off on January 23, 1943 from the air base on Truk Island and gained altitude, saw a trio of B-24s flying in close formation below him. He dived steeply and died, destroying one of the bombers. On May 8, 1943, Sergeant Oda took off with his squadron from an airfield in New Guinea to cover a convoy of ships. High in the sky, he saw a B-17 reconnaissance aircraft. Several times Oda tried to attack him, but to no avail, because his Ki-43 light aircraft could not maintain the altitude of the B-17. And then Oda sent his fighter to the American bomber. In the collision, the B-17 torn off the wing console, and both machines fell, engulfed in flames.

The increasing frequency of allied bomber raids forced the Japanese to begin practicing the air ramming method. One of the first Japanese pilots to use this method regularly was Lieutenant Masajiro Kawato. He made his first ram in 1943, shooting down a B-25 over Rabaul. Having shot all the ammunition in the battle, he sent his Zero from below into an American bomber, managing to jump out by parachute. On November 11, 1943, flying to intercept American bombers, he made a second ramming, but he himself was wounded. On December 17, Cavato attacked the P-39 fighter. As a result of his frontal attack, the planes exploded, and the Japanese pilot again escaped using a parachute. Cavato long

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about the B-24 ram. Finally, on February 6, 1944, over Rabaul, he managed to ram the tail of the bomber, destroying it, and he himself escaped safely by parachute. Kavato became the second pilot in the world after the Hero of the Soviet Union B.I. Kovzan, who made four rams.

On October 8, 1943, in an air battle on a Ki-43-1 fighter, Anabuki shot down two B-24 bombers, and when the ammunition ran out, Anabuki rammed a third car. At the end of the war, he served in the Japanese Air Defense Forces, after the war he served as a helicopter pilot in the Japan Self-Defense Forces.

Lieutenant Naoshi Kanno, learning the tactics of ram attacks, came to the conclusion that the only way to ram the B-24 and survive at the same time himself was to be able to slip under an enemy bomber on a collision course, not fall under the propellers of his motors and manage to cut off the steering wheel. The first two attempts in the summer of 1944 were unsuccessful. However, Kanno, who had already thoroughly studied the comparatively safe zones around the bomber, made a third attempt. He latch in front of the bottom and at high speed crashed into the tail of the B-24. After the impact, the fighter went into a tailspin, and the bomber, having lost control, fell into the sea. Kanno managed to bring his plane into level flight and safely land the mangled car at the airfield.

On September 5, 1944, Yoshimasa Nakagawa and his gunner Isamu Osumi, flying out at night to intercept B-24 bombers and catching the target, found that the gun had jammed. Meanwhile, the B-24, having bombed, was already leaving. Nakagawa, sending a fighter to an enemy aircraft, managed to rip open the fuselage of the bomber with a propeller, which immediately lost control and began to fall. A piece of glass from a broken fighter cockpit hurt Nakagawa's eye, but the pilot managed to land the car safely.

By the end of November 1944, General Wasita organized several groups of pilots in his 10th Army Aviation Division, the main task of which was to use ram attacks on enemy bombers. The tactics of such groups were quite simple. They flew out to intercept B-29 bombers along with an escort aircraft,

who had to choose a target and give the order to destroy it. If the target could not be found, the group returned to its airfield. |

On the night of November 29, a ramming group from the 10th Air Division achieved its first successes using new tactics. 6 B-29 bombers were shot down, most of them by ramming. However, several bombers withstood the rams, and one even managed to return to base, having lost one of the four engines as a result of an attack by a Japanese fighter.

In December 1944, Major John Krause's B-29 bomber was rammed by a Japanese fighter, resulting in the loss of a significant piece of the right wing. Krause turned the damaged car around, hoping to bring it to his airfield, but another Japanese fighter rammed the bomber, damaging two engines. However, B-29, losing altitude, stubbornly went towards the sea. At this time, the third fighter rammed the B-29 from below, after which the bomber fell into Tokyo Bay. On the night of December 3, Lieutenant T. Shinomiya, Sergeants M. Itagaki and M. Nakano, as part of a group, flew out to intercept 80 American bombers heading for Tokyo. During the attack, the Japanese pilots destroyed 13 bombers, including 6 by ram attacks. Itagaki escaped by parachute, while Nakano and Shinomiya managed to land the damaged planes. On the same night, Sergeant M. Nakano rammed a B-29 and landed on the damaged aircraft.

By December 5, 1944, five ram squadrons had already been formed as part of the 10th air division, all of them were armed with the most lightweight Ki-44, Ki-84 and Ki-61 fighters. By the end

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In 1944, the pilots of the 10th Air Division accounted for 28 B-29 bombers shot down, 16 of which were destroyed by ramming. It should be noted that several Japanese pilots made two rams. So, the already mentioned Sergeant M. Itagaki on January 27 wounded the second B-29. Like the first time, he managed to parachute out of his damaged fighter. On March 13 and 16, 1945, non-commissioned officer K. Fujimoto destroyed two B-29s in one sortie with this technique and survived. Sergeant S. Nobe rammed the bomber twice.

2. RAMMER FIGHTERS

We remind the reader that in 1941 German pilots were ordered not to approach Soviet aircraft during air attacks in order to avoid ramming them. By the middle of the war, however, the Luftwaffe's senior leadership was increasingly turning to the idea of using a battering ram to interrupt attacks by the Allied bomber armadas. The reason for this was the loss of German aviation superiority in the air and the increasing use of fighters to perform defensive missions, as well as receiving data from their intelligence that Soviet pilots survived in two of the three air rams carried out.

Among the numerous German programs for the development of “wonder weapons” was the program for the creation of missile interceptors, the appearance of which was caused by the fact that from January 1943, Allied aviation, in addition to night bombing, began to use massive daytime bombing strikes on targets located on German territory. . It became obvious that B# 109 and Ru 190 fighters were unable to effectively intercept allied bombers. The fact is that formations, for example, American B-17 bombers, in order to maximize the mutual support of their aircraft with small arms fire, used a close formation, known as a “combat box”. Therefore, German fighters, which did not have a special superiority in speed and at the same time had rather large frontal sections of propeller engines, were a good target for the shooters of B-17 bombers at a distance of more than 1000 m.

Under these conditions, specialists from the German Aviation Ministry (KIM) came to the need to develop small-sized fighters that would be capable of developing high speeds during an attack. Since the Germans already had experience in developing the first He 176 and Me 163 rocket planes, in early 1944 BIM adopted a program for the development of object-based rocket fighters that took off from a launcher or were lifted into the air with the help of an aircraft. carrier or towing vehicle. It was believed that such a small interceptor should first attack the formation of bombers using cannon or rocket weapons, and after the ammunition was used up, attack the enemy with a ram. The probability of massive losses of these mini-interceptors during combat operations was assessed by experts as very high, therefore, the technical requirements issued by the CTO in the late spring of 1944 provided for the maximum simplification of the aircraft design, the use of the cheapest materials and unskilled labor in the manufacture during assembly.

However, at the same time, special attention was paid to the problems of increasing the survivability of the aircraft and the survival of the pilot. Moreover, the technical requirements contained clauses on the obligatory reservation of the pilot's cabin and equipping it with means of quick escape, among which the ejection seat was also considered. At the same time, it was assumed that after splashdown or landing, the pilot would be picked up by special rescue squadrons, which were armed with E 156 light aircraft. ”, “Sombold” and “Zeppelin”.

Work on the creation of specialized ram fighters was also carried out in the USA (Northrop company) and the USSR (IVS designed by L.G. Golovin).

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By December 1944, the Arado firm completed work on the project of the Ag E.381 interceptor missile fighter. It was assumed that the fighter would rise into the air suspended under the fuselage of a jet bomber.

ka At 234C and after uncoupling from it at a height of 1000 m higher than the flight altitude of allied bomber formations, should attack them in a dive mode. The engine was turned on to perform a second attack, after the ammunition was used up, a ramming attack on the tail of the enemy aircraft was to be used. The return to the base after completing the combat mission was carried out in a gliding mode with a landing on a retractable ventral ski; if necessary, a braking parachute could be used during the run. The project was carried out in three versions: Ag E.381-[, AgE.381-Pi AgE.381-Sh.

The AgE.381-G fighter was equipped with a NUK 509A-2 liquid-propellant engine. The machine had a rectangular wing and tail, ailerons, elevators and rudders were used as control surfaces. The cockpit of the fighter, in which the pilot was lying down, was a steel pipe inserted into the fuselage with a wall thickness of 5 mm. The glazed nose fairing had a 140 mm thick reinforced glass protective screen inside. Access to the cockpit was carried out through the upper armored hatch, so the pilot could not leave the cockpit before separation from the carrier aircraft.

The fuel tanks were located behind the cockpit: two tanks with fuel (S-Z) - on the sides of the pilot's legs, one with an oxidizer (T-ZuI) - behind his feet. In the wing above the fuselage there was one MK 108 cannon with 45 rounds of ammunition. To increase the survivability of the aircraft, metal sheathing and a power pack were used in its design. During high-altitude flights, the pilot had an autonomous oxygen device; for heating the fighter's cockpit, warm air was supplied from the carrier aircraft. In addition, the pilots of both aircraft had a telephone connection for negotiations, as well as a power line to ensure the uninterrupted operation of the interceptor's instrumentation. The modular design of the machine made it possible, after landing, to quickly disassemble the aircraft (wing, fuselage, tail) and transport it in an aircraft or car to a new base.

Characteristics Ag E.381-1: wingspan - 4.43 m, aircraft length - 4.69 m, height - 1.29 m, empty weight - 830 kg,

take-off weight - 1200 kg, fuel weight - 52 kg, oxidizer weight - | la - 150 kg, maximum speed at an altitude of 8000 m - 900 km / h. |

The second version of the At E.381-P had slightly improved visibility from the cockpit, increased wingspan and length of the aircraft. The NMK 5098 liquid-propellant rocket engine was used as an engine, the armament was one MK 108 cannon and two K 2 73 missiles at the wingtips.

Characteristics of Ag E.381-P: wingspan - 5.0 m, aircraft length - 4.95 m, height - 1.15 m, take-off weight - 1265 kg, maximum speed at an altitude of 8000 m - 885 km / h.

ArE.381-Sh had increased dimensions compared to the second variant. The cross-sectional shape of the fuselage was close to triangular, which made it possible to install an entrance hatch on the side. This was done in order to provide the pilot with the opportunity, in case of an emergency, to leave the aircraft before separation from the carrier. The wingtips were bent down, which made it possible to use them during landing as additional supports. Instead of a cannon, it was supposed to use six V, 65 missiles suspended under the wing as weapons.

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Characteristics of Ag E.381-Sh: wingspan - 5.05 m, aircraft length - 5.7 m, height - 1.51 m, takeoff weight - 1500 kg, maximum speed at an altitude of 8000 m - 895 km / h.

According to the company's estimates, the labor intensity of manufacturing one E.381 was 600 man-hours, while the following materials were required: 670 kg of steel, 120 kg of wood and 40 kg of aluminum alloys. A wooden full-size mock-up was made, several wooden frames and, possibly, the only unmanned prototype for towing tests. Work on Ar E.381 was stopped due to the lack of an order from KIM.

Wa 349

In the summer of 1944, the German command decided to start production of a missile interceptor designed by E. Bachem under the designation Ba 349 Macet ("Viper"). The interceptor was supposed to take off vertically from a ground launcher, attack the enemy with unguided missiles, and after using all the missiles, ram it.

Immediately before the collision, the interceptor pilot had to eject, at the same time, with the help of explosive bolts, the tail section of the fuselage was disconnected from the rocket engine and landed on a parachute. The surviving propulsion system was to be reused.

The design of the Ba 349 was mainly made of wood, the straight wing had no mechanization, and the aircraft was controlled using control surfaces located on the cruciform tail unit. The cockpit was located in the forward part of the fuselage, and under the plastic nose cone there was a honeycomb battery of unguided rockets (24 Hs 217 rockets of 73 mm caliber or 34 VAM rockets of 55 mm caliber). To protect the pilot in flight, it was planned to book the cockpit - the installation of a front armored plate behind the rocket battery, and a rear armored partition behind the seat.

The cockpit contained: control panel, pilot's seat, rudder pedals, fire control pedal, aircraft control stick, Patin autopilot, oxygen equipment and radio control equipment. Aiming during the attack was carried out using a frame located in front of the cockpit between the fairing and windshield. The windshield had a thickness of 60 mm, the hinged part of the lantern opened up and back, and was dropped when the pilot left the aircraft. In the middle part of the fuselage there were a wing and two fuel tanks: the lower one for the S-907 for 190 l or the upper one for the T-ZoYo for 440 l; 533" and a container with a parachute. |

The takeoff of the interceptor from the launcher was carried out with the simultaneous operation of the launch boosters and the rocket engine, set to the idle mode. The thrust limitation of the LRE was made so that the starting overload did not exceed 2.5 2. It was believed that even with this overload the pilot could not manage to control, so the rudders were blocked before launch in a given position, ensuring the interceptor's safe exit from the guides of the launcher . At an altitude of 170-200 m, the boosters were dropped, the rocket engine was brought to full thrust, and the autopilot was switched on, controlled by radio from the ground. After reducing the load

ki at an altitude of about 1200 m, the pilot had to switch to manual control. After completing the combat mission, the pilot was instructed to leave the interceptor.

During the development of the interceptor, it turned out that the cockpit was too small to accommodate an ejection seat, and the design of the seat itself had not yet been worked out. For this reason, the pilot's concept of leaving the aircraft was changed: now he had to unfasten the seat belts, disconnect the aircraft control stick, fold back the canopy and reset

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forward fuselage. The bow was separated along with the windshield, front bulkhead and control panel. The deploying brake chute in the tail section seemed to shake the pilot forward out of the seat, after which the pyrotechnic bolts were activated, connecting the tail section with the middle part of the fuselage. After separation, the pilot and the tail section, together with the propulsion system, each landed on their own parachute. |

The first prototype Ba 349 was intended for towing flight tests and had a tricycle wheel chassis. It first took to the air without a pilot in November 1944 in tow behind an He 111 aircraft. The first unmanned vertical launch using boosters from a ground-based launcher was scheduled for December 18; The tests ended in failure - the interceptor did not leave the guides of the launcher due to the fact that the launch accelerators burned out in the places of the ignition wiring. The first successful unmanned launch took place on December 22, after which another 10 unmanned vehicles successfully launched. Based on the test results, a number of changes were made to the design of the Ba 349U-16, which became the prototype of the A-series machines. On February 25, 1945, the first full launch of the Ba 349A took place with a rocket engine and a dummy in the cockpit. The flight was successful, after which KEM demanded to speed up the tests and move on to manned flights. On February 28, test pilot Ober Lieutenant Lothar Siebert took off for the first time on the Ba 349A. The plane started successfully, but during the climb the cockpit canopy spontaneously opened, concussing the pilot. The car, gaining a height of about 1500 m, dived and exploded when it hit the ground, the pilot died.

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Ba 349A

Despite the catastrophe that occurred during the first manned flight, the tests continued, having completed 34 launches until April 1945, including 7 manned ones. After testing on the aircraft, the tail section of the fuselage was redesigned for the new NUK 509S twin-chamber liquid-propellant rocket engine, the hardpoints of the launch boosters were moved closer to the tail, the height of the fuselage was slightly increased to accommodate two MK 108 cannons. 349A-50 prototype machines, immediately launching the Ba 349V into serial production (the first batch of machines was to have the designation Ba 349V-1). In total, 36 aircraft were built before the end of the war, among them three experimental Ba 3498 aircraft, one of which flew. None of the built Ba 349 interceptors managed to take part in the hostilities, although 10 vehicles were placed at Kirheim at starting positions to repel allied air raids. Almost all of them, along with launchers, were destroyed by special SS teams during the retreat, but four

the vehicles were captured by allied troops - three American and one Soviet. At the very end of the war, the technical documentation for the Ba 349 was acquired by the Japanese, but not a single vehicle was ever built. |

Characteristics Ba 3498: wingspan - 4.0 m, length - 6.0 m, height - 2.25 m, empty weight - 880 kg, takeoff weight - 2234 kg, maximum speed - 990 km / h.

Gotha aircraft.

In October 1944, the Gotha company proposed a project for a ram fighter launched from a carrier aircraft. Two versions of the machine were developed: one with a liquid-propellant rocket engine in the rear fuselage, the second without an engine (glider). The pilot's cockpit was made in the form of an armored cone; during the development, two options for the cockpit location in the aircraft were considered. In the first version, the cabin, made in the form of an armored cone, was docked to the fuselage using pyrobolts. During the attack, the aircraft pierced the attacked bomber with a cone, while the pyrobolts exploded, the cone separated from the fuselage and flew right through the bomber, after which it descended by parachute. To provide

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the pilot had at least a minimal chance of surviving a ramming, it was planned to install a seat that was supposed to automatically transfer the pilot to a horizontal position so that he could. withstand large impact loads. To do this, a device was installed on the nose of the cone, which, upon impact, gave a signal to the actuators to turn from the throwable part of the pilot's seat to a horizontal position and to detach the cone from the fuselage of the fighter.

In the second version, the cockpit was docked to the fuselage from above, and the forward part of the fuselage of the fighter carried an explosive charge to enhance the destructive effect when it hit the bomber. During the impact, the cabin shot back up, as if catapulted, and then it made a free descent by parachute. In addition, the option of installing an ejection seat was considered, which, a second before the impact, would throw the pilot out of the cockpit, after which he would descend by parachute. The firm's proposal did not receive official support.

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Me R.1103

The first version of the Messerschmitt Me R.1103 / mini-missile interceptor project was developed in early July 1944. The aircraft was constructed mainly of wood, the wing had a steel spar. The pilot entered the cockpit through the top hatch and lay down in it. An MK 108 cannon was installed under the pilot’s bed and a rocket could be suspended; two solid-propellant rocket engines Bechin Te 513 were suspended under the fuselage.

The interceptor took off with the help of a drop-down launch cart in tow behind the aircraft by towing vehicle 811090 or Me 262. After uncoupling from the towing vehicle, the interceptor pilot started the rocket engines and attacked the target. After the attack, the pilot dropped the front of the cockpit and left the plane with a parachute, while the plane descended on its own parachute to the ground to be reused.

Characteristics of R.1103/1: wingspan - 6.2 m, aircraft length - 4.7 m, maximum speed - 810 km/h.

The second version of the Me R.1103/1 project, developed in September 1944, differed from the previous one in that the pilot was seated in the cockpit; - movable ventral ski. In an emergency, the pilot left the aircraft with a parachute, having undocked the cockpit from the fuselage with explosive bolts.

R.1103/1 characteristics: wingspan - 5.38 m, aircraft length - 5.0 m, maximum speed - 700 km/h.

Work on Me R.1103 was stopped after the decision to build Ba 349 was made.

Me R.1104

The Me R.1104 mini-missile interceptor, like the Me R.1103, had a rectangular wing and a single-fin tail. The pilot was seated in the cockpit, one MK 108 cannon was located in the forward part of the fuselage, and one NMK 509A-1 liquid-propellant engine was located in the tail part, landing was carried out on a retractable ventral ski. It was developed in two versions, slightly different from each other.

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The emergency escape of the aircraft was carried out in the same way as in the second version of the Me R.1103.

Characteristics: wingspan - 6.2 m, aircraft length - 4.7 m, maximum speed - 810 km / h.

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The design was carried out in August-September 1944, but all work on the Me P.1104 was stopped after the decision to build the Ba 349 was made.

So 344

The $0,344 mini-missile interceptor project was developed under the direction of Heinz Sombold. The NUK 509 liquid-propellant rocket engine with a thrust of 1500 kg, installed in the rear fuselage under the cockpit, was used as a propulsion system. Small arms were installed in the middle part of the fuselage above the wing: two MS 151 cannons

or one MK 108. 50 344 was to be delivered to the combat area by a carrier aircraft; after completing the combat mission, the interceptor beste landing on the ventral ski.

In January 1944 H. Sombold oi new his car. The design feature of this aircraft was the nose part (warhead) detachable during the attack of the target with an explosive charge weighing 500: kg and a non-contact fuse; to increase the accuracy of hitting the target, the warhead had plumage. It was supposed to first launch a warhead at bombers marching in a formation of the “combat box” type, and then make a ramming. Until the end of the war, only aerodynamic tests of models on a scale of 1:5 were carried out.

Aircraft characteristics: wingspan - 5.7 m, length - 7.0 m, height - 2.2 m, flight weight - 1350 kg.

Epedepde Raphegaosÿ

The Zeppelin aircraft EPerepde Raptetgaiÿ (“Flying Armored Fist”) was developed as a ram fighter. The pilot was located in the cockpit lying down, the nose cone was made in the form of a strongly elongated “beak”, with which the aircraft was coupled with the B#109C tug during the flight. A single-wheel landing gear under the fuselage was intended for takeoff. The tail unit was of the moth type. Six solid-propellant rocket engines (three on each side) were installed on the sides of the fuselage behind the wheel, which were turned on by the pilot after uncoupling from the towing vehicle.

Armament: two missiles V, 65, suspended under the wing. In the event of an unsuccessful attack by an enemy aircraft with missiles, the pilot of the projectile aircraft had to further ram. After completing the combat mission, the pilot undocked the nose of the cockpit and left the aircraft with a parachute. The dismembered plane was lowered by parachute, where it was picked up by a special team of three people and delivered by tractor to the launch site for reuse. rat Characteristics: wingspan. - 4.5 m, aircraft length - 6; 0 m; maximum speed - 850 km / h.

Watteg |

The Katteg (“Taran”) mini-missile interceptor was designed by Zeppelin in November 1944. It was supposed to be delivered to the attack area by a BE 109 towing aircraft, after uncoupling, attack enemy aircraft with unguided rockets, and, if necessary, use a ram .

The aircraft had a rectangular wing and a normal single-fin tail, under the fuselage there was a retractable landing ski. In the tail section of the fuselage there was a Schmidding solid-propellant rocket engine, the operating time of which was about 10 seconds, the pilot was seated in the cockpit. There was a battery with 14 VAM unguided rockets under the drop nose cone. The cockpit had armor protection, and the wing

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strengthened so that during a ram attack by an enemy aircraft, the interceptor would not receive serious damage. In an emergency, the pilot could leave the aircraft with a parachute by undocking the cockpit from the fuselage, which was fastened with explosive bolts.

Characteristics of the interceptor: wingspan - 4.9 m, aircraft length - 5.1 m, height - 1.2 m, launch weight - 860 kg, maximum speed - 970 km/h.

ÿÿ-79 The seriousness of the intentions of American aircraft designers to develop ramming fighters is evidenced by the fact that a special device was patented in the USA for a relatively safe ramming of enemy aircraft. This device was a long saw with sharp steel teeth, which was hinged under the fuselage of a fighter. In the usual position, the saw was retracted into the fuselage, but it was released when attacking enemy aircraft. With the help of a saw, it was possible to cut the wings, tail, cockpit, etc. e. In September 1942, the terms of reference were issued to US aviation firms for the development of a rocket-powered mini-interceptor. This was followed by a contract with Northrop for the development of three experimental aircraft: two gliders under the designation MX-334 and

one airframe with an engine under the designation MX-324 Koske! Mipe ("Rocket wing"). The MX-324 was to be equipped with the KhSAT-200 LRE with a thrust of 90 kgf. All three machines were supposed to become flying laboratories to obtain the data necessary for the development of the future aircraft under the designation XP-75. The gliders were mainly of wooden construction, with the exception of the central section, made of a metal tube, in which the pilot was lying down. For MX-334 gliders, the tricycle landing gear with fairings was made non-retractable, with the nose gear shifted to the left. MX-324 took off with the help of a drop-off launch cart, landing was carried out on a ventral ski.

Although the MX-324/334 was originally designed as a pure “flying wing” without vertical surfaces, it was later found that it needed a vertical tail to improve maneuverability. A plywood keel was added, which was reinforced with wire braces. The first towing flight of the MX-334 took place on October 2, 1943, and the first flight of the MX-324 with the engine turned on after uncoupling from the towing vehicle had
place

in July next year. The running time of the engine, running on monoethylaniline and fuming nitric acid, was a little over four minutes.

However, problems with the low-power XCAG.-200 engine forced the abandonment of the development of the XP-75 and the development of a new aircraft XP-79 Vat Mpv (“ram wing”) with a Boo]ef engine that also ran on monoethylaniline and fuming nitric acid, but having a thrust of 900 kgf. The aircraft structure was welded and made mainly of magnesium alloy; the thickness of the wing skin in the region of the leading edge was 19 mm. The pilot in the cockpit was lying down. In the rear fuselage there was a vertical keel. Tests of two variants of the XP-79 and XP-79a aircraft (several larger dimensions) showed their unsatisfactory flight qualities, after which it was decided to abandon the use of liquid propellant rocket engines. The new modification of the XP-79V aircraft was equipped with two J30 turbojet engines with a thrust of 522 kgf each. The air intakes of the engines had a rectangular section, two vertical keels were installed in the rear fuselage, and the landing gear was made of four struts. The first flight of the XP-79V, which took place on September 12, 1945, was also his last. The plane took off normally, carried out the flight task for 15 minutes, after which it suddenly fell into a tailspin. The pilot, unable to get the plane out of a spin, died. Immediately after this disaster, the XP-79B program was terminated.

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Characteristics of the MX-324: wingspan - 9.8 m, machine length - 3.7 m, maximum speed - 483 km/h.

Characteristics of ÿÿ-79ÿ: wingspan — 11.6 m, aircraft length — 4.3 m, takeoff weight — 3933 kg, maximum speed — 805 km/h.

IVS

In the Soviet Union, the development of a ram fighter was carried out during the war under the leadership of L.G. Golovin, who worked at that time in the aircraft repair shops of the People's Commissariat of the Aviation Industry. At the beginning of 1942, military engineer 3rd rank Golovin proposed a small-sized military escort fighter-interceptor (IVS) with a solid-fuel rocket engine. By design

designer, an interceptor with a recumbent pilot was supposed to take off from a mobile launcher in . the location of troops, protected objects or from the deck of the ship, the landing of the aircraft was to be carried out by parachute. It was assumed that such a missile aircraft, which did not have cannon armament on board, would hit the target with the help of a ram.

IVS

However, this proposal did not receive support, and on the recommendation of the customer, the author developed a draft of another version in a classic layout with a seated pilot. The aircraft was armed with a 20 mm ShVAK cannon with 20 rounds of ammunition, and an LRE designed by L.S. Dushkin with a thrust of 300 kgf. However, the idea of taking off from a land or ship installation was preserved; during takeoff, a starting solid fuel booster with a thrust of 1000 kgf was to be used. According to calculations, it turned out that an aircraft with a length of 3 m, a height of 1.05 m, a wingspan of 1.75 m and a weight of about 270 kg can reach speeds of up to 1060 km/h, rate of climb up to 270 m/s and achieve dynamic ceiling 7500 m. But the IVS project was not implemented. The expert commission, having confirmed its feasibility, nevertheless considered that the construction of the machine was inexpedient because of the low altitudes of its use (5500-7500 m), at which anti-aircraft artillery was more effective.

3. PLANES-SHELLS Unmanned aircraft-projectiles

The development of projectile aircraft began at the dawn of

_ development of aviation, according to the terminology of that time, this

type of aircraft was called aviation torpe

ladies. In 1908, the French engineer Rene Lauren proposed

design of a motor-compressor air-jet

engine, and in 1910-1911. on the basis of this engine, he developed the world's first project of an aircraft projectile.

In 1915, the American inventor Thomas Edison and US Secretary of the Navy Josephus Daniels proposed to organize an advisory board of prominent inventors to assist the US military industry in the development of new types of weapons. One of the results of the activities of the Naval Advisory Council was the work on the creation of the first aircraft torpedoes by Elmer Sperry and Charles Kettering.

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Elmer Sperry was a famous inventor at the time, with 350 patents. Despite the fact that the range of his hobbies was very wide, his main work was in the field of development of control systems. In particular, he developed a stabilization system for warships, which made it possible to increase the accuracy of firing from ship's guns in moderate seas. The inventor was also his son, Lawrence Sperry, who in June 1914 demonstrated an automatic gyroscopic stabilizer (a prototype of the autopilot), which allowed Curtis' seaplane to fly straight ahead on a given course and at a given altitude without

human intervention. After the war began, the British Air Force involved E. Sperry in the work on the creation of a gyro-stabilized bombing system, which was supposed to keep the aircraft on a given course, while the bombardier aimed at the target.

In 1916, L. Sperry registered a patent for an aircraft torpedo control system, which included the following elements:

aircraft altitude gyro stabilizer,

an automatic course control gyroscope, into which the initial data was previously entered,

barometer for determining flight altitude,

an engine RPM counter that determined when the aircraft should shut down the engine and start diving towards the target,

an electric generator to provide power to the gyroscope motors and servomotors that moved the flight control rudders of the aircraft torpedo.

In April 1917, an advisory board approved the Sperry aircraft torpedo design, and the Navy awarded Zregg Sugozsora a $200,000 contract to build such a weapon. Sperry first set up an autopilot on Curtis' regular plane. Tests of the biplane M-9, equipped with an autopilot, were successful, although there was a pilot in the cockpit during the flight, who controlled the aircraft during takeoff and landing, and also observed the operation of the automatic system in flight.

In November 1917, Curtis delivered the first purpose-built aircraft torpedo powered by a two-cylinder engine. Engineers from the Zreggu Sugossore company equipped the torpedo with an autopilot, after which L. Sperry personally performed test flights on the machine to identify possible defects. During the tests, he got into an accident four times.

The first flight of an unmanned vehicle took place on March 6, 1918. The aircraft torpedo automatically took off and performed a smooth, steady flight until the control automatically ended the flight at a range of about a thousand meters. Further tests of the unmanned aircraft torpedo were less successful, so the Sperry company returned to work on the M-9. The M-9 took off from

using a trolley and made a confident flight along a given course, the autonomous flight range was about one kilometer. The timer set for a given period of time gave a signal to stop the Sita OH-5 engine with a power of 90 liters. s., then the device dived at the target. Further tests showed good performance of the projectile, after which the army ordered an experimental batch of 100 vehicles. The M-9 had the following characteristics: wingspan - 6.7 m, aircraft length - 4.6 m, takeoff weight - 431 kg, maximum speed - 113 km/h.

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Meanwhile, the US Army was working on the design of its own aircraft torpedo. The project was led by the inventor Charles Kettering, who at the time was working for the company's Southon-Murgan Airplay Company in Dziton, Ohio, and was on the company's board of directors. Among the many inventions of Kettering was the invention of the automobile starter, at one time Kettering headed the research laboratory of General Motors. K. Kettering began work on the aviation torpedo after he had observed the flights of the Sperry autopilot at the end of 1917, from which he was delighted. However, he believed that Sperry's system was too complicated, so something cheaper and more technically simple was required.

Kettering was assisted in the construction of the apparatus by Orville Wright, who performed the strength calculation of the fuselage. As a power plant, a four-cylinder air-cooled Pe Rajta engine with a power of 40 liters was used. with., which cost only 40 dollars. The device took off with the help of a four-wheeled cart, which accelerated along the rails. However, Kettering's attempts to create a workable autopilot were unsuccessful, and he was forced to turn to E. Sperry for advice. Sperry kindly provided him with assistance.

As a result, the constructed Kettering apparatus actually resembled a torpedo equipped with biplane wings with a small transverse U. The apparatus was constructed of wood and cardboard; it was equipped with a pneumoelectric control system with pre-set flight parameters. The control system also included a timer, which after a certain period of time

nor, installed before the flight, closed the electrical circuit of the device that turned off the engine and dropped the wings. After that, the apparatus with the warhead swooped down on the target. The first tests of the device, called Vis (“Bug”), began in September 1918, and the first flight under the full program took place on October 2. The test, however, was not successful. After takeoff, the vehicle lost control and began to fly in circles over the launch site, rising higher and higher until it ran out of fuel, after which it fell to the ground. Further tests were more successful, but the war had already ended by that time, so the government decided to combine the army and navy programs. Competitive tests showed the advantage of the Sperry-Curtis apparatus, as a result of which work on the Kettering apparatus was terminated. In total, about 20 Vig projectiles were built, which had the following characteristics: wingspan - 4.6 m, aircraft length - 3.8 m, height - 1.42 m, takeoff weight - 240 kg, warhead weight - 82 kg , maximum speed - 193 km / h, range - 120 km.

At about the same time, the development of aircraft torpedoes in England. At the end of 1915, Professor A. Low, who worked on the creation of radar devices, was involved in the development of a radio-controlled aircraft to fight the German Zeppelins and to attack ground targets. The projectile aircraft received the designation AT, which meant Aepa! Tagrey (“Air Target”), this was done for reasons of secrecy in order to hide the true purpose of the weapon. The AT aircraft was a small radio-controlled monoplane equipped with a 50 hp Gnome engine. With. The first copy of the AT took off in October 1916, but the operation of the engine created significant electrical interference for the radio control system. In this regard, work on AT was stopped, but other aircraft manufacturing companies became interested in the concept of A. Lowe.

At the aircraft factory in Farnborough, a prototype aircraft monoplane torpedo was built with a wingspan of 6.7 m and with a 35 hp engine. with., developed by the company "ABC". One of the aircraft torpedoes of this type was demonstrated in March 1917, but it crashed immediately after launch. Firm Soruif tried to build an aircraft torpedo according to the scheme, a biplane with an ABC engine,

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but this aircraft was never completed. The exact number of different types of aircraft torpedoes developed by the British during the First World War and the details of their chronology are unclear. Work on an automated aircraft continued in England after the war. In 1920, the standard Bristol E.2B fighter aircraft was radio-controlled and flew successfully, although during test flights the aircraft had a pilot to back up the automatic control system in case of an emergency. In 1921, a radio-controlled aircraft was tested.

These efforts led to the creation in 1927 of the aircraft torpedo Gaguph ("Gortan"). Gagupkh was a small monoplane with a radial engine and a system

my gyro control. One of the first prototypes was successfully launched from a destroyer off the coast of England. Subsequently, a large number of projectiles equipped with a 113 kg warhead were tested in flight in the deserts of Iraq. However, the test results were inconclusive.

In 1931, the Rateu firm developed a radio-controlled aerial target Ozeep ("Queen"), which was controlled from an Eaigey PE seaplane; a total of three devices were built. Successful testing of prototypes became the basis for the construction in 1935 of 420 radio-controlled targets under the designation OH.82V Ocheep Vee ("Queen Bee"), which was a conversion of Yue NauShapa training aircraft. From here, as they believe, the name Chgope ("drone") came from to designate an unmanned aerial vehicle. In the first months of the Second World War, Oceep Vee vehicles were used for reconnaissance of the coastal regions of England. Characteristics of Open Vee: maximum speed - 175 km / h, practical ceiling - 4267 m,

' flight duration - 3 hours.

In the 20-30s. work on the creation of radio-controlled projectile aircraft was carried out in the Soviet Union. So, for example, for the TB-1 projectile, the Daedalus telemechanical system was created. It allowed, after takeoff of the TB-1 with the help of a pilot and subsequent switching to the system, to control the projectile aircraft by radio from the escort aircraft, while the pilot was then ejected from the TB-1 with a parachute:

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Molet) on the basis of the TB-3 bomber, various designs of autopilots were tested - pneumatic, hydraulic, electromechanical. A technique was worked out for returning a TB-3 projectile pilot to his airfield by transferring to an I-15 or I-16 fighter suspended from the TB-3. At the end of the 30s. SB, I-16 and UT-2 aircraft were studied as projectile aircraft, they were controlled by radio from a control aircraft. In 1940, within the framework of the Berkut project, two versions of the projectile aircraft based on the TB-ZRN were developed. The first variant was developed as a disposable apparatus, the second variant provided for the creation of a reusable apparatus, which, having bombed at the target, was supposed to return to its base. In 1942, a disposable remote-controlled vehicle, which received the designation "Torpedo", was transferred to military trials. The Torpedo, which was a TB-3 aircraft filled with 4 tons of explosives, was supposed to attack the railway junction in Vyazma, occupied by the Germans. Control of the nako projectile while approaching the target due to malfunctions in the aircraft transmitter, communication with the projectile aircraft was lost, and it fell, missing the target. it was supposed to be carried out by radio from a DB-ZF aircraft, one

The Americans and the British again resumed work on aircraft torpedoes only after the outbreak of World War II. In 1940, the British firm MPez Aigsara created a mock-up of an aircraft torpedo called Hoop-1a. The Noor-!a was a small, high-wing aircraft built around a 450 kg bomb. The aircraft was powered by a Sircy Ma]og engine, the wingspan of the aircraft was 4.3 m, and the design speed exceeded

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480 km/h However, the official authorities were skeptical about this aircraft, so work on it soon ceased.

At the beginning of 1941, the US Air Force, developing work on the Veer projectile, provided a contract to C. Kettering and General Motors for the development of a new device under the designation A-1. The A-1 was a radio-controlled monoplane that could carry a 225 kg bomb load over a distance of 640 km at a speed of 320 km/h. Like its predecessor, the A-1 was launched using a launch cart. A large number of devices of this type were built, but the program was canceled in 1943.

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During the war, the American aviation industry mass-produced TOM, TOV, VO-7 and VO-8 projectiles, the Italians were working on converting $.M.79 bombers into projectile aircraft.

trm/tre

In 1942, research began in the United States under the Opsop (“Choice”) project. The first of this project was the remote-controlled aircraft TOM-1 (according to American terminology - ask dgope) of the Ipÿerÿÿÿÿÿ Aisgay & Epripeegÿpe company, which could carry a torpedo or a bomb under the fuselage. About a hundred TOM-1 aircraft were built, but they were used mainly for training and evaluation tests. TOM-1 was followed by a series of TOK-1 projectiles in the amount of 189. Their first combat use took place in late summer - early autumn 1944 in the area of the Solomon Islands during attacks on Japanese ships. Of the 46 launched devices, 29 copies reached the goal. However, the result was not regarded as satisfactory, and the commander of the US Pacific Fleet, Admiral Chester Nimitz, spoke out against the idea of using unmanned projectile aircraft. As a result, the Navy abandoned the program and offered to transfer it to the Army Aviation, but the Air Force was not interested in the device.

Characteristics of TRE-1: power plant - 2 Iusotype 0-435 engines with a capacity of 220 hp each. With. (164 kW each), wingspan - 13.72 m, aircraft length - 9.14 m, cruising speed - 280 km/h, armament - 907-kg bomb or torpedo.

va-7

The US Air Force was developing a series of projectiles as part of the secret project SottoPabje Vot, Otopla Tappsed ("Guided Bomb Launched From the Ground"), this series was designated VO. Among the devices of the VO series there were machines of various configurations, including even a re-equipped training aircraft of the company Gagasha AB-21, but the radio-controlled bombers B-17 and B-24, which carried an explosive charge, turned out to be the most brought to practical use.

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In July 1944, the US Air Force adopted a program called Aphrodite (“Aphrodite”), under which it was supposed to convert some of the damaged B-17 bombers into radio-controlled unmanned projectiles. Approximately 25 B-17 bombers, mostly B-17E modifications, were converted into BO-7s, which were to be used to attack heavily fortified targets such as submarine repair docks and V-cruise missile launch sites. -1. The 562nd bomber squadron, based in Honington, was responsible for the combat use of drones. After completing the training program, the squadron, equipped with ten unmanned aerial vehicles and four command and control aircraft, moved to Fursfield, 40 kilometers from Woodbridge (north-east of London).

Converted B-17 aircraft carried 9,070 kg of Torpex contact explosive. fuse. VO-7 were supposed to take off under the control of a crew of two people (pilot and

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engineer). The crew left the projectile with parachutes after setting the course of the device to the target and bringing the explosives to combat readiness. To improve safety when leaving the top of the cockpit was cut off. After the crew was ejected with parachutes, the unmanned vehicle continued to fly, remotely controlled from the SO-4 escort aircraft (V-17 conversion), for this purpose, the op e-Atop radio control system was installed on the VO-7. At the initial stage of the flight, the VO-7 and ÿÿ-4 were accompanied by a fighter, which, in the event of loss of control of the projectile, was supposed to shoot it down.

As soon as the VO-7 approached a certain distance from the target, its controls, upon command from the CO-4 aircraft, were set to the position required for the attack, after which the control aircraft left for the base. The first tests of the VO-7 showed that it needed to be improved. Two television cameras were installed on it: one in the cockpit to monitor the instrument panel and one in the bow to monitor the flight course along ground reference points, images from the cameras were transmitted to the control aircraft. ava a :

The first combat use of the VO-7 took place on August 4, 1944. The purpose. were the starting positions. German missiles

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V-1 near Pas de Calais. During the first phase of the operation, two command and control aircraft and two unmanned aerial vehicles took off, but one of the aircraft went out of control shortly after the first crew member parachuted. The device fell near the coastal village of Orford and exploded, leaving behind a huge funnel. The body of the other crew member was never found. The second unmanned aerial vehicle successfully reached the target area, but due to low clouds, the television image on the screen of the operator's receiver in the control plane was poor, so the deviation from the target during the attack exceeded 450 m. The second phase of the operation was slightly more successful. One VO-7 suffered a control failure before it could attack the target and was shot down by German anti-aircraft artillery. Another aircraft attacked the target with a deviation of about 500 m.

On August 6, two drones took off to attack German missile launch sites in France. The crews of the drones successfully left their vehicles after takeoff, but a few minutes later one of the vehicles went out of control and fell: into the sea. Another unmanned vehicle, due to a malfunction in the control system, suddenly began to move in a circle over the industrial area of Ipswich, but after some time, fortunately, turned away to the sea and drowned.

After these failures, it was decided to replace the Roche-Amon radio control system with a Caciog system. The very first raid of a drone with a new control system was accompanied by a disaster: the parachute of the pilot of one of the devices did not open during the jump, and the pilot died. Nevertheless, the unmanned vehicle completely passed along the planned route to the target, but was shot down by anti-aircraft guns and fell approximately 100 m from the target. During the next flight, one of the vehicles crashed, missing the target due to the poor quality of the television image, and the second vehicle sank into the sea due to failures in the control system.

Further operations took place in October without much success. One unmanned vehicle was shot down by anti-aircraft artillery, and the other lost control over the North Sea and crashed into the water after running out of tonniva. The third device failed to detect its target due to poor visibility, so the angry operator from the aircraft controlled

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leniya sent him on a course to Berlin. The fourth drone fell close to its target and caused serious damage.

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On October 27, the US Strategic Aviation Headquarters in Europe concluded that the actions of the VO-7 devices against heavily protected targets were not successful, so the decision was made to use the VO-7 against industrial targets in large German cities. The first of these sorties took place on 5 December, targeting a railway station west of Hanover. Due to difficult meteorological conditions, the first aircraft was unable to find its original target and was shot down by anti-aircraft artillery while approaching the next target. The second vehicle did not explode its warhead after it fell on the target, and the Germans got a relatively undamaged aircraft with a full set of remote control systems. The last flight under the Argodne program took place on January 20, 1945, the target was the power plant in Oldenberg. Both unmanned vehicles flew past the target, after which the Argoaye concept was considered unsuccessful. In addition, it turned out to be expensive and was often more dangerous for its crews than for the Germans.

Characteristics of the VO-7: wingspan - 31.64 m, aircraft length - 22.78 m, height - 5.82 m, takeoff weight - 28,600 kg, maximum speed - 320 km/h, service ceiling -

· 11400 m, range - 560 km.

va-8

In 1944, the US Air Force began converting several worn-out B-240/]J bombers into BO-8 radio-controlled unmanned aerial vehicles, which were supposed to be used against heavily defended targets in the Japanese islands. The concept was the same as for the VO-7 vehicles, the takeoff was to be carried out by a crew of two people. After takeoff and climbing to cruising altitude, the crew removes the warhead fuses from the fuses, switches the manual control of the aircraft to remote control from the escort aircraft and jumps out with a parachute. The payload of VO-8 consisted of 11,300 kg of Torpex explosive. Total number of V-24 bombers converted into VO-8 projectiles

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unknown, but it is known that they never took part in hostilities.

As part of Alu's own project! The US Navy converted at least two RV4Y-1 aircraft (patrol version of the B-24 bomber) into projectile aircraft, but the designation VO-8 was not applied to these vehicles. The same project provided for testing a remote control system based on the RU \ U-1 Ueshiga television installation. The image of the television camera of the unmanned aerial vehicle was transmitted to the B-17 escort aircraft. The control signal corrected by the system was then sent to the unmanned vehicle. Two flights of RV4Y-1 drones took place in the North Sea, but without any success. On August 12, 1944, a warhead spontaneously exploded on the first vehicle during takeoff and killed both crew members. The second apparatus in September of the same year attacked an area target, but the accuracy of the strike could not be determined, because the television camera was damaged by anti-aircraft artillery fire. Due to the low reliability and lack of accuracy of unmanned weapons, the Apu! soon closed.

Characteristics of VO-8: wingspan - 33.53 m, aircraft length - 20.22 m, height - 5.46 m, takeoff weight - 29,000 kg, maximum speed - 320 km/h, service ceiling - 9100 m, range - 3700 km.

$.M.79 At the time of Italy's entry into the war, bombers and torpedo bombers 5.M.79 Sparrow (“Sparrow”), created by the Savoia Marchetti company, were in service with fourteen units based in Italy, in Sicily Lia, Sardinia and Libya. The first combat use of the 5.M.79 took place on June 13-14, 1940, when 19 vehicles attacked French ships off the coast of the Riviera. Torpedo bombers from the 92nd group and the 28th squadron first acted against the Allied ships in the Aegean Sea, and then were transferred to Libya,

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from where they flew out to attack - on: English convoys in the Central Mediterranean. So, for example, during the attack of a sea convoy that was going with “cargo to Malta”, English destroyers were sunk.

Low, Javad, I evÿop and Zosha!. However, despite being the aircraft 8.M.79 were recognized best among the Mediterranean torpedo bombers, they, like many other types of Italian aircraft, suffered very heavy losses.

After the capitulation of Italy on September 8, 1943, 97 combat-ready 5.M.79 aircraft remained, of which 22 aircraft ended up in the ranks of the Italian Air Force, which fought on the side of the Allies, where they served as bombers, torpedo bombers and transporters. The machines, deployed in the German-occupied zone, became part of the aviation of the fascist Kerch Psa Zostaje TsaPapa (E51 - Italian Social Republic), created on September 23 under strong pressure from Hitler, Mussolini again stood at the head of B. Being in service with a group of torpedo bombers, these 8.M.79 delivered numerous strikes against allied ships in the Mediterranean.

One of the 5.M.79 bombers was converted into an unmanned projectile. An explosive-laden aircraft took off under the control of a pilot on the night of June 4-5, 1944, and headed for Gibraltar with the aim of attacking the British ships stationed there. In a given area, the pilot switched the aircraft control from manual to remote, and then jumped out of the car with a parachute. The projectile aircraft continued its flight, remotely controlled by an escort! about - the common aircraft Sapi 2.1007-1. However, the attack failed, because: due to a defect in the radio control system, the projectile crashed; without reaching the target. Nevertheless, work in this direction was continued, and a prototype of a wooden projectile aircraft was built at the Atbtgosip company, which passed flight tests in June 1944.

Characteristics of 5.M.79: wingspan - 21.2 m, aircraft length - 16.2 m, height - 4.1 m, takeoff weight - 11,300 kg, maximum speed - 435 km/h, service ceiling - 7000 m, range - 2000 km.

Composite aircraft-sleep rows

In the prewar years in England, aircraft designer Robert Mayo proposed: a scheme for a composite mail aircraft for transatlantic flights. Composite sa-

The plane was a system of two seaplanes mounted one on top of the other. A prototype of the composite aircraft was built by Short by order of the Ministry of Aviation. A slightly modified four-engine seaplane 5.21, called "Maya", was the lower carrier aircraft. A four-engine seaplane 5.20 "Mercury" was installed on top. The first separation flight took place on February 6, 1938. After a large number of test flights, on July 21, 1938, the Mercury made a non-stop flight to Montreal lasting 20 hours and 20 minutes, covering a distance of 4715 km, carrying on board 272 kg of mail. On October 6, Mercury made a record non-stop flight to South Africa (9652 km). The outbreak of war interrupted the operation of the composite aircraft - in May 1941 it was destroyed during a German air raid.

In the Soviet Union, work with composite projectile aircraft was carried out in the late 1930s. A TB-3 bomber with 3.5 tons of explosives was used as a projectile aircraft, a KR-6 control aircraft was mounted on the back of the TB-3. The range of this hitch was about 1200 km.

Soviet aircraft designer V.S. Vakhmistrov in 1944 developed a project for a composite projectile aircraft, the basis of which was a glider with a control aircraft mounted on its back. The glider was made according to the scheme with a two-beam tail, and in each beam

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there was a bomb weighing 1000 kg. The control aircraft ensured the delivery of the glider to the target area. The takeoff of the hitch was carried out with the help of a resettable starting cart. Having delivered the glider to a given area, the aircraft carried out aiming and unhooked it. After uncoupling from the aircraft, the glider was to fly towards the target using a gyroscopic autopilot. However, the project was not implemented.

In 1941, Germany, using the experience of the USSR and England, began the development of composite projectile aircraft. After an initial study, the KEM technical department rejected the idea on the grounds that there was no practical application for it. However, already in 1942, on the instructions of the ministry, the OE Glider Institute began studying the features of the flight of a bundle from a glider and the control aircraft mounted on its back. Initially, the experiments were carried out with the PE5 230 laner, and as a self-.

years of control were used K] 35, Em 56 and Vg109E. As a result, it was decided to start flight tests of an experimental bunch of a projectile aircraft, into which the Ji 88A bomber was converted, and a control aircraft, which was used as a VF 1092 fighter. After completion. tests, a program code-named "Beethoven" was adopted. Within the framework of this program, in July 1943, the CEM issued the Junkers firm with the task of preparing 15 copies of the Mistel-1 combat system (p115e] - “dung team”). This system consisted of a ÿi 88A bomber and a Vÿ109E fighter.

In the spring of 1944, as part of the 4th group of the KS 101 bomber squadron (TU/KS 101), a special squadron was formed, which began to receive the Misteli-1. For the training of the flight personnel, the ÿi 88A-4 without a warhead was used, almost all equipment was removed from the cockpit, such training machines were designated "Mistel 5-1". Fighting vehicles were equipped as follows. The nose of the ÿi 88ÿ-4 was easily separated using quick-release bolts and replaced by a warhead with a shaped charge weighing 3800 kg. The fighter was mounted on top of two front rigid struts and one rear under a spring strut. Two options for the combat use of the bundle were envisaged. According to the first option, takeoff and flight to the target was carried out only with the engines of the lower machine running. The engines of the upper vehicle were started when approaching the target, after which the pilot transferred the bunch into a gentle dive and unhooked. The in-flight undocking mechanism was as follows. The pilot of the control aircraft released the rear pillar, which, leaning back along the fuselage of the bomber, pressed the limit switch, which opened the locks of the main pillars. The freed bomber swooped down on the target, and the control plane left for the base. The second option provided for the joint operation of the engines of both aircraft until the moment of undocking, while the engine of the upper aircraft was fed with fuel from the carrier. On the night of June 24, 1944, the Mistelei-1 squadron from [U / KS 101] attacked the Allied ships in France for the first time at the mouth of the Seine River.

_ Other variants of the Mistele were also developed. For example, Mistel-2 was a
a bunch of ÿi 88@-1s G 52

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Eu 1904-6 or Em 190E-8. In 1944, 75 J and 886-1 bombers that were under repair were converted into Misteli-2. The first sample took off in November of the same year, it was planned to deliver 125 copies.

Mistel-3 was a modernization of Mistel-2, in which an additional landing gear was installed under the fuselage of the lower aircraft, which was dropped after takeoff. The strengthening of the landing gear was caused by several Mistelei-2 accidents due to strut failures during takeoff from poorly prepared airfields.

In October 1944, the 4th group of the KO 101 bomber squadron was transferred to the P / KS 200, it was armed with 60 Mistels. In December, it was supposed to carry out a massive attack on the British naval base in Scapa Flow, but due to bad weather

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conditions for the attack did not take place. Then the German command redirected the Mistels to use them as part of Operation Ezhepsapiteg (“Iron Hammer”), which was scheduled for March next year. The essence of the operation, the technical part of which was developed by Professor Steinmann from Kÿ.M back in 1943, was a one-time bombing of power plants located in the European part of the Soviet Union in order to paralyze the defense industry. For these strikes, special aviation mines ZottegfaPop ("Summer balloon") were developed, which were to be dropped into the reservoirs of power plants. While remaining afloat, the mine was supposed to be delivered by the flow of water to hydroelectric turbines or water intake systems for cooling thermal turbines and put them out of action. About 100 Mistels were required to carry out the Iron Hammer operation. According to the scenario of the planned operation, the Mistels were supposed to take off from airfields in East Prussia, but in March these airfields were captured by the advancing Soviet troops. In connection with the change in the situation, P / KS 200 received an order to redirect their Mistels to attack bridges on the Oder, Neisse and Vistula rivers. Since April, the bomber squadron KS 30 has been connected to these combat operations, partially re-equipped with the Misteli.

A version of Mistel-3 was developed, which was intended for reusable use.
as

ultra long range fighter. At the same time, the lower aircraft was piloted by its crew, a radar was located in the forward fuselage, and a radar was installed in the rear of the cockpit.

_ MC 131 machine gun, two drop fuel tanks with a capacity of 900 liters were suspended to achieve maximum range.

"Mistel-4" was a bunch of ÿi 886-7 and Ta 152H fighter. Until the end of the war, about 250 copies were built, up to 50 copies were captured by allied troops in the Mercerburg area.

"Mistel-5" was a bunch of stuffed with 2500-kg explosives of the lower Ta 154A aircraft and the upper control aircraft Ru 190A-8. On July 14, 1944, the specifications were issued and the Posen plant was supposed to convert four Ta 154As to this combination. The bundle, whose maximum weight reached 15,150 kg, had to take off from a concrete runway. Preparations for construction began at the end of July. Ferry flights with a warhead installed required some strengthening of the landing gear, since the landing weight of the combination was about 12,500 kg. KIM considered that the problem would be solved if the launch cart was developed. However, there was no time left for this, so it was decided to supply bundles without warheads from the factory, and install them already in combat units. The Focke-Wulf firm assumed that the first Mistel-5s would be ready for delivery at the end of August, fifty bundles were being prepared for re-equipment. Work continued with a high degree of urgency until mid-August, but then an order was received from the VT M to convert the first four aircraft into night fighters.

In addition, a bunch of two Ta 154 aircraft was being developed, while the control aircraft led the projectile in a `rigid tow. When approaching the formation of bombers, the tug was dropped, and the Ta 154 aircraft continued to fly side by side, connected by a control cable. Immediately before the attack, the cable was unhooked. The project of this bundle was not implemented. .

The Germans were developing projects for the Misteley, which included jet aircraft. One of these projects was developed in the fall of 1944 at the firm

"Mistel" - rocket plane

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"Blom and Foss". Prosktom envisaged that on the back of the Ro 217 aircraft an MOCR aircraft would be installed, consisting of a small control aircraft in which the pilot was lying down, and rockets. Both the control plane and the rocket were equipped with ramjet engines. It was assumed that the entire foam would be delivered to a given area on a Po 217 aircraft. At a distance of about 300 km from the target, the pilot of the control aircraft started the engines of his coupler, after separation from the carrier aircraft, the coupler had to continue flying. on one's own. After pointing at the target, the pilot separated: the control plane from the rocket. And returning to the base, landing on the ventral ski ...

for oa

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Characteristics of MSVR: wingspan - 6.0 m, length ca

aircraft - 8.0 m, rocket weight - 1200 kg, control aircraft weight - 500 kg, fuel weight - 2300 kg, total takeoff weight - 4000 kg, range, taking into account delivery by carrier aircraft Oo 217 - 1000 km.

"Mistel" - ekranoplan

The Siebel company proposed its own version of the ship-based Mistel for attacks on large formations of ships, dams, dams, etc. The Ru 190 was used as the upper aircraft, and a glider with four rocket engines was used as the lower one. in the rear fuselage. The wingspan of the glider was 20 m. Two options for using this hitch were proposed. In the first version, the hitch was supposed to take off from an inclined ramp installed on the deck of the ship. After aiming at the target, the pilot of the control plane unhooked the glider, which dived at the target. In the second version, the hitch was lowered into the water with a crane. The glider, the wing of which had outer sections bent upwards, in this case played the role of a torpedo boat, controlled by the pilot of the Ru 190 aircraft mounted on top. The pilot started the engine of the upper aircraft, and the hitch swam to search for the target. After detecting the target, the pilot turned on the rocket engines of the glider, and after reaching a certain speed with the hitch, undocked the control aircraft from the glider and took off from it. For this purpose, the glider was equipped with inclined rails that served as a takeoff ramp.

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The Messerschmitt company proposed using the Me 262 jet fighter as part of the Misteli. In one of the options, it was supposed to be coupled with the converted Li 287 jet bomber. In another option, it was proposed to use the Me 262A-1 + Me 262A-2a / 02. The upper aircraft was a modified version of the Me 262A-2a/02, in which the nose was glazed, and in the cockpit there was an additional recumbent place for the bombardier's navigator. The lower Me 262A-1 aircraft was converted into a projectile aircraft: all weapons and the cockpit were removed from it, and the combat charge and control equipment were placed in the vacated volume. Until the end of the war, none of the proposed German projects was implemented.

Manned projectiles

Luftwaffe

Convinced of the low efficiency of cruise missiles E! 103 (V-1), the German high command turned to the idea of using manned projectiles against ships and well-protected ground targets on enemy territory. Despite the fact that the practical chances of a pilot to leave the cockpit of a projectile with a parachute (as he was prescribed by the instructions) at a high dive speed and land safely (or splash down) were estimated by many German experts as one of a hundred, zealous

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Proponents of this idea were the well-known test pilot Hanna Reitsch and German "saboteur No. 1" SS Hauptsturmführer Otto Skorzeny.

In the fall of 1943, Luftwaffe officer Hauptmann Heinrich Lange led a small group of volunteer pilots to practice the technique of using "non-standard" attacks on enemy ground and surface targets, including attacks using manned projectiles. In October 1943, H. Lange met with the famous test pilot Hanna Reitsch and Dr. Benzinger, head of the German Institute for Aviation Medicine. They developed specific proposals for the use of manned projectiles, which were then discussed with E. Milch, G. Goering's deputy. Hanne Reitsch

was instructed to present the final version of the proposals personally to A. Hitler, which was done on February 28, 1944. The result of consideration of these proposals was an order to deploy work on the study of various “non-standard” attack methods on the basis of the 200th Ka 200 bomber squadron (Katr ezsuadeg 200).

As part of the KS 200, an experimental 5th squadron 5./KS 200 was created, the commander of which was appointed H. Lange. Unofficially, the squadron had the name "Leonidas staffel" (1.eopiyassiakhe1) after the name of the hero of Thermopylae, the Spartan king Leonidas, who died along with his detachment of 300 people in a battle with the thousands of troops of the Persian king Xerxes, which clearly indicated its purpose. The flight crew of 5./KS 200 consisted of 90 people: 60 people from the Luftwaffe and 30 from the SS team of O. Skorzeny. The leadership of all work related to the formation of groups of suicide pilots and their development of attack methods was entrusted to the Chief of the General Staff of the Luftwaffe, General Korten. Aviation firms were instructed to develop manned projectile aircraft for these purposes (Me 328, OVR.E, OVR.E, E! 103K, etc.).

Me 328

In the summer of 1944, the Messerschmitt firm proposed to the 5th squadron KO 200 to use the Me 3288 as a manned projectile aircraft towed to the attack area by aircraft ÿu 88 (ÿu 388 or He 177). The Me 3288 aircraft, equipped with two Az 014 pulsed engines, was originally developed as an airborne fighter-bomber.

Structurally, the Me 328B was almost entirely made of wood. Two forward fuel tanks occupied the forward part of the fuselage, two rear tanks were located in the tail section. Between the compartment of the front tanks and the cockpit there was an armored partition 15 mm thick, in addition, an additional armor plate 15 mm thick and reinforced glass were installed in the cockpit in front of the pilot's seat. ny screen 80 mm thick. The folding part of the cockpit canopy opened up and to the right. To ensure the possibility of an emergency exit of the aircraft
pilot's tail section

the fuselage was attached to the middle part with explosive bolts. When it was separated, the seat, together with the pilot, seemed to be pulled out of the cockpit, after which the pilot descended by parachute.

The landing gear of the aircraft was a retractable ventral ski, which was also a bomb rack. For this reason, the Me 3288, having taken off from a carrier aircraft with a suspended bomb, could land on a ski only after the bomb was dropped. The engines were installed under the wing on holders with dampers, the lower surface of the wing at the place where the engines were installed had an asbestos coating. Fuel was supplied to the engines with the help of an electric pump, which was powered by a battery before the start of the electric generators. Electric generators during the flight were driven by two windmills located at the wing root (on some experimental machines, windmills were located near the wingtips).

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~ In the proposed version of the projectile aircraft, the Me 3288 instead of fuel tanks in the nose compartment was equipped with a combat charge, the landing ski, armor and part of the instrumentation were removed. The aircraft was supposed to be delivered by a towing vehicle to the area where the enemy ship was located and, after uncoupling in a gliding flight, approach the target. After that, the pilot aimed the aircraft at the target, putting it into a dive, and, having shot off the tail section of the fuselage, left the cockpit with a parachute. After splashdown, the pilot was supposed to be picked up by a special rescue team.

However, due to problems with the engines, KIM decided to terminate the Me 328 development program, so tests began as a projectile of the Ru 190 fighter with a suspension of large-caliber bombs. The tests carried out showed that it is heavily loaded

- the female Rm 190, which was almost twice as heavy and one and a half times as large as the Me 328, had little chance of breaking through the air defense system of protected objects. Therefore, the VGM decided to urgently develop small disposable projectiles launched from carrier aircraft in the air. The coordination of all research and design work was carried out by the director of the YES and a member of the Presidium of the German Academy of Aviation Sciences (PAI), Professor V. Georgii.

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Characteristics of Me 3288: crew - 1 person, power plant - 2 PUVRD Az 014 with a thrust of 300 kgf, wingspan - 8.5 m and its area - 12.0 m?, aircraft length - 8.63 m, take-off weight - 4730 kg, maximum speed - 590 km / h, flight range (when dropped from a height of 2500 m) - 800 km.

OVR.E/ RVR.E

The Daimler-Benz company has developed in two versions a project of an aircraft projectile intended for suspension under the R.S. carrier aircraft. beÿpe fotoremstaeg, which could carry 5 OVR.E projectiles or 6 OVR.E projectiles under the wing. The aircraft projectile RV R.E was equipped with a He 011 turbojet engine, which was installed under the fuselage in the tail section. The landing gear was missing, in the bow of the fu

OVRE

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Zelyazha was located combat charge weighing 2000 kg. It was assumed that after aiming at the target, the pilot ejected from the cockpit. The second version of the projectile OV R.E had a VMU 018 turbojet engine installed above the cockpit, which gave the pilot a chance to make an emergency landing on the fuselage. In the forward part of the fuselage was placed a combat charge weighing 3000 kg. After pointing at the target of his aircraft, the pilot dropped the hatch located under him, fell out of the cockpit, and then descended by parachute. |

Characteristics of OV R.E: crew - 1 person, wingspan - 8.5 m, aircraft length - 9.2 m, height - 3.2 m, maximum speed - 1000 km/h.

Characteristics of RV R.E: crew - 1 person, wingspan - 9.0 m, aircraft length - 12.96 m, height - 3.0 m, maximum speed - 1050 km/h.

EI 1038

In OE$, on the instructions of the COM, a project was developed for the Reichenberg manned projectile based on the Yei 103 cruise missile. In total, four variants of the aircraft were developed: |

ÿÿ 103ÿ-1/ÿÿ ÿ Eÿsÿepÿega I — two-seater without engine,

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ÿÿ 103ÿ-1/ÿÿ ÿ ÿÿÿÿÿÿÿÿÿÿ ÿ — two-seater with an engine,

E 103A-1/Ke Sh Keÿszhepbege Sh — single-seat with engine,

ÿÿ 1034-1/Ke TU Keÿsÿepbete GU - combat variant.

2 Variants H 1036

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The first three modifications were intended for testing and training of flight personnel, the fourth for combat use. Be I was towed in the air by an Hz 126 aircraft, all the rest were launched in the air from a He 111N-22 bomber.

The Reichenberg differed from the Ei 103 only in the installation of the cockpit in front of the engine air intake (instead of the compartment with compressed air cylinders) and the presence of ailerons on the wing. The cockpit was equipped with a pilot's seat, a dashboard with a sight; altimeter, attitude indicator, speed indicator and clock. In addition, a gyrocompass and an electric battery with a converter were located in the cockpit. The aircraft was controlled using a conventional handle and pedals. The cockpit canopy opened to the right, the windshield was armored.

The first prototypes of the Reichenberg did not have a pilot rescue system. On serial machines, it was supposed to install the simplest emergency escape system, similar to the system used on the OV R.G projectile or on the Henschel Na 132 jet attack aircraft. When the ejection lever was actuated, the bottom hatch lock was opened, freeing it , after which the pilot fell down from the cockpit along with the parachute.

The prototype "Reichenberg" was manufactured at the factory

de firm "Henschel" in Berlin-Schonefeld. Flight tests of the machine began in Rechlin in September 1944. During the first flight, the pilot suffered serious back injuries due to the high speed of landing on the ventral ski. During the second flight, the canopy was torn off, and again the pilot was seriously injured during landing. After finalizing the design of the machine, the tests continued, several flights were performed by Willy Fidler, a test pilot of the Fieseler company. Hanna Reitsch, who tested the third prototype, completed the first flight successfully, despite the damage the aircraft received during uncoupling from the aircraft carrier. However, the second flight of the same machine, due to the loss of sand ballast, which was placed in the fuselage instead of the warhead, ended in an accident: the plane crashed, but H. Reitsch survived.

Soon a two-seat training model without the Reichenberg-1 engine was built, and in November, a two-seat vehicle with the Reichenberg-P engine. During the second

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test flight "Reichenberg-P" on November 5, 1944, the tip of the left wing broke off due to strong vibration from the engine, but test pilot Heinz Kensche managed to leave the cramped cockpit and descend by parachute. This accident demonstrated the great difficulty of leaving the vehicle in flight, even for a highly qualified test pilot.

At the end of 1944, the training of instructors for training flight crews to fly on the Reichenberg-G\U began, and production facilities were prepared near Dannenburg for the conversion of E! 103 into manned Reichenbergs. As already mentioned, the Reichenbergs were intended for the Leonidas Staffel of the KS 200 squadron. Of the trained volunteer pilots, approximately 35 people were trained until the end of February 1945, but then the training was suspended due to lack of fuel. During a test flight at Rechlin on March 5, test pilot Kenshe lost his luck after he ripped the skin off the Reichenberg's wing during a dive.

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This catastrophe broke the patience of the commander of KS 200, Lieutenant Colonel Baumbach, who was an opponent of the Reichenberg program. Baumbach turned to the Minister for Armaments and War Industry, Albert Speer, for help. On March 15, Speer and Baumbach visited Hitler, and Speer was able to convince the Fuhrer that suicide was not in line with the traditions of the German military. In the end, Hitler agreed with these arguments, and on the same day Baumbach ordered the suicide squadron to be disbanded. By that time, more than 200 Reichenberg projectiles were already in the Luftwaffe depots in Dannenberg and Pulverhof, but not one of them was ever used in combat.

The plant in Dannenberg was visited several times by Japanese officers in order to get acquainted with the process of building the Reichenberg. German technological assistance was provided in the development of the Japanese analogue of the Reichenberg, the Kawanishi Baika kamikaze aircraft.

Characteristics of the projectile Ei 103K ("Reichenberg-ÿU"): crew - 1 person, power plant - 1 PUVRD ÿÿ 014 with a thrust of 300 kgf, wingspan - 5.7 m, aircraft length - 8.0 m,

take-off weight - 2250 kg, warhead weight - 850 kg, maximum speed - 800 km/h, flight range (when dropped from a height of 2500 m) - 330 km, flight duration - 32 min.

Ta 154A

In mid-May 1944, the design bureau of the Focke-Wulf firm submitted proposals for converting fifteen Ta 154A fighters into a manned projectile Ta 1544-0/02 PshKkgetzgogeg (“Line Breaker”). However, BÿM issued an order for the conversion of only five machines. According to the proposals, the nose of the production aircraft, including the cockpit, was converted into a warhead to accommodate 2,000 kg of explosives. In the middle part of the fuselage, a cockpit for the pilot was to be equipped, in which an ejection seat was installed. When approaching the formation of allied bombers, the pilot had to direct his projectile at the target, turn on the autopilot, and eject himself at the last moment.

The first Ta 154 A-0 Pwkreggsgoger (serial number 120004), built at the Posen factory, became the prototype for the new version, it first flew on August 5, 1944. On the same day it was destroyed during an air raid by Allied bombers. four more
machines from the factory

· Nos. 12011, 12001, 120060 and 120104 were delivered between July and October 1944. However, none of the built projectiles was used in combat.

Characteristics of Ta 154A-1: crew - 1 person, wing span - 16.3 m and its area - 31.4 m?, length - 12.55 m, height - 3.6 m, takeoff weight - 9580 kg, fuel supply - 1270 l, service ceiling - 10,900 m.

Ta 154 (escape scheme)

A9/ATO

Even at the beginning of the war, the missile center in Peenemünde began to study the possibility of launching missile strikes against the United States. Since the A4 (V-2) rocket was not suitable for this purpose due to its limited range, von Braun's designers began to develop a two-stage rocket under the designation A9 / A10, which was supposed to be launched from Europe. The first stage was the A10 launch vehicle, 20 m high, 4.1 m in diameter, and with a launch weight of 69 t. Then this

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the variant was replaced by another - with one large combustion chamber. The A9 rocket was envisaged as the second stage. Its length was 14.2 m, diameter 1.7 m, total weight 16.3 tons. It was supposed to place about a ton of explosive in the bow. In the middle part, it was originally envisaged to install a swept wing, later, based on the results of blowing in wind tunnels, it was replaced. deltoid wing. At that time, only a pilot could provide the necessary guidance accuracy at a flight range of about 5000 km, so it was planned to install a pressurized pilot's cabin in the bow, and the A9 actually turned into a manned projectile.

By 1943, the A9 / A10 project was already ready, but the events that took place soon forced the German leadership to change plans. The fact is that on the night of August 17-18, 1943, an allied armada consisting of almost 600 long-range bombers dropped more than 1,500 tons of high-explosive and incendiary bombs on Peenemünde, causing enormous damage to the missile center. Under these conditions, work on the A9/A10 was ordered to be frozen, and all efforts should be focused on the serial production of the A4 ballistic missile.

In June 1944, by order of Hitler, work was resumed under the code name Rtgojeki Atepka. In order to speed up the work, it was decided to use for flight tests the cruise modification of the A4 missile, which was conceived at the beginning of the war. This modification received the designation A4b, it was developed in unmanned and manned versions. On the A40 manned cruise missile, it was supposed to install an aircraft landing gear, as well as an additional turbojet

ny or ramjet engine in the lower stabilizer, the pilot was located in a pressurized cabin in the nose of the rocket.

There is an opinion among some historians of weapons that the Germans planned to use the A9 / A10 missile in the Elster (Magpie) operation. The goals of this operation, developed in 1944, were: radio guidance of missiles to the center of New York, collection of intelligence information about the work on the creation of the American atomic bomb and the management of the actions of Nazi sabotage groups, which were supposed to be thrown from South America, at enterprises US military industry. It was assumed that the highest skyscraper in New York, the Empire State Building, would be attacked by missiles, the morale effect of this attack would have been enormous. The flight scenario of the A9/A10 rocket should have looked like this. After the launch of the rocket and the separation of the first stage A10, the second stage A9 with a working rocket engine continued to fly with an increase in altitude and speed. After running out of fuel, the rocket switched to the gliding mode, and the pilot took control. He was supposed to carry out a further flight using radio signals from submarines for navigation. Having brought the car to the target and stabilized its trajectory, the pilot had to eject. Theoretically, it was assumed that the pilot who descended on a parachute would be picked up by German submarines or he would be captured by the Americans. The guidance of the missile in the final phase of the flight was to be carried out by the signal of the radio beacon installed by that moment by the German saboteurs in the Empire State Building.

It must be said that operations of this kind were planned in the Reich Security Main Office (RSHA), which was the foreign intelligence service of the SS. Particularly for sabotage and terrorist operations, department “C” of the 6th Directorate, headed by O. Skorzeny, was responsible. In this department, operations were prepared to disable military industrial facilities.

The United States and England, special attention was paid to sabotage at the enterprises of the Soviet defense industry in the regions of the Urals, Northern Kazakhstan and Western Siberia, which were inaccessible to German aviation, and it was also planned to destroy the leaders of the anti-fascist coalition (Stalin, Roosevelt and Churchill) in Tehran.

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The drop-in of the agents responsible for Operation Elster took place on the night of November 30, 1944. SS agents Erich Gimpel, an employee of Section C of the 6th Directorate of the RSHA, and William Kolpag managed to successfully infiltrate the environment. Americans and start preparing the operation, but after a while they were arrested by the FBI. From time to time, publications appear in the Western press, which say that the launch of the A9 / A10 rocket system did take place on January 24, 1945. The system was allegedly piloted by SS Sturmbannführer Rudolf Schroeder, who came to Hitler's space detachment from the Luftwaffe. Ten seconds after launch, he reported to the command post that the rocket was on fire, after which the connection was interrupted. Meanwhile, the rocket continued its flight, it went into near space and developed the speed necessary for crossing the Atlantic. | However, in unmanned mode, the second stage of the A9 deviated from the set course and did not reach the American coast, sinking in the waters of the Atlantic Ocean. Therefore, some historians (mostly German) consider R. Schroeder to be the first cosmonaut in history.

In reality, this was not the case. By the end of 1944, the Germans managed to build only prototypes of the unmanned version of the 446 rocket. Tests of the first prototype, which took place on December 27, 1944, ended in an accident due to a failure of the missile control system at an altitude of about 500 m. Only the third launch of an unmanned rocket, which actually took place on January 24, 1945, was successfully completed.

lo, and the rocket fell into the sea.

ÿThe Germans failed to implement the planned projects of the A4 and A9 manned cruise missiles before the end of the war, all the work remained at the stage of sketch drawings. Therefore, most likely, serial A4 ballistic missiles (V-2), which were supposed to be launched near the coast of the United States, should have taken part in the Elster operation. The technique for launching missiles from floating launch containers was developed in 1943, it consisted of the following. The container with the missile placed in it was supposed to be delivered to a given area in tow behind an underwater

boat. During towing, the container was in a submerged position, and before launching the rocket, it was transferred to a vertical position (like a float) by pumping ballast water. The technique was developed for the use of Type XXI submarines, each of which was capable of simultaneously towing three such containers with missiles. However, before the end of the war, only one launch container was built at the shipyard in Elblag.

As for the training of pilots for rocket flights, indeed, a group of suicide pilots, among whom were O. Skorzeny's people, was trained as part of the already mentioned 5th squadron of the 200th bomber squadron. They were preparing for special operations similar to Operation Elster. However, not a single case of combat use of German aircraft with suicide pilots was recorded until the end of the war.

Zenger rocket bomber

In parallel with W. von Braun, the German scientist Eugen Senger worked within the framework of the Ategika project. Its goal was to develop the concept of a long-range hypersonic missile bomber capable of taking off from German territory and delivering a bomb load weighing several tons to the target. The bomber was supposed to have a trapezoidal wing of small elongation, carrying a fuselage with spaced tail and rocket engine in the rear fuselage.

°
In the forward part of the fuselage, it was supposed to place a pressurized cockpit, and the view from it was very poor, because instead of glazing, it was supposed to install viewing side slots and auxiliary optical devices. Behind the cockpit in the fuselage there were two cylindrical tanks 20.5 m long and 1.8 m in diameter, separated by sealed transverse partitions. The compartments formed by the partitions were used for storage

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liquid oxygen (front compartments) and synthetic gas oil (middle and rear compartments). In the center section between the tanks there was a compartment that could hold up to 30 tons of bombs. Landing was supposed to be on a wheeled chassis with a nose support, two main struts and tail crutch.

The horizontal takeoff of the bomber was to be carried out with the help of a special launch cart, which was a long platform with a rocket engine. In the lower part of the platform there were skids that slid along a rail more than 3 km long.

Senger calculated various options for the trajectories and flight modes of the bomber, one of these options is given below - a one-way flight from the territory of Germany to carry out a bombing attack on New York (the estimated distance from the launch site is 6500 km, the bombing site - load - 6 tons).

The launch cart accelerated the aircraft to a speed of 500 m/s, and 36 s after the launch, at a distance of 12 km from the take-off point, the rocket engine was switched on. A fuel reserve of 84 tons was produced in 336 seconds. After that, the speed reached 6370 m / s, and the height - 91 km, the distance from the launch site - 736 km, the flight weight of the aircraft - 16 tons.

Here the pilot had to take control and carry out further flight in the “wave-like” gliding mode, which was an alternation of dives into dense layers of the atmosphere with subsequent jumping into rarefied layers. The "wave-like" gliding mode made it possible to achieve a greater flight range compared to conventional steady-state gliding. At a distance of 5550 km from the start and 950 km from the target (at 1150 from the flight), the speed dropped to 6000 m/s, and the flight altitude decreased to 50 km. Further, a dive was carried out on the target, bombing was to be carried out from a height of less than one kilometer. Having dropped the bombs, the pilot had to bring the bomber into climb and have time to eject. It was assumed that after landing at a distance of several kilometers from the place where the bombs fell, the pilot would have to be taken prisoner.

Until the end of the war, the Zenger concept did not have time to be implemented, because it required a huge amount of work to create appropriate launch devices, create powerful liquid-propellant rocket engines, and study the problems associated with heating aircraft structural elements and its components. when flying at hypersonic speeds, developing the bomber project itself, developing navigation aids, etc. d.

4. KAMIKAZE WEAPON

During 1942-1943. Allied forces in the Pacific moved closer and closer to Japan. However, for the Japanese, by the end of the war, the need to achieve superiority in the air became so important that, in the conditions of an aggravated shortage of materials, the commander of the aviation of the Japanese Navy, Takijiro Onishi, proposed to melt down the pride of the Japanese fleet, the battleship Yamato, into metal for the manufacture of new aircraft. The metal gates of the Yasukuni Shrine were put into action - they were used in the production of fighters. The emblem of the temple was applied to the planes, the details of which were made of this metal. Alcohol derived from sweet potatoes began to be used as fuel for aircraft, pine rhizomes were processed to obtain lubricants, etc. But the lack of aircraft was only one of the problems of the Japanese, they needed people who could fly. As the allied troops advanced from one island to another, the military formations of the empire increasingly felt themselves in an extremely distressed situation. But the closer the allies approached the Japanese islands, the more fierce the resistance of the Japanese became. Many Japanese preferred to throw a grenade at their feet rather than surrender. In the diary of one of the dead Japanese soldiers there was an entry: “I have finally come to the place where I will die. I am pleased to note

_ that I will die peacefully in the true spirit of the rising of the sun.” Shocked American Soldiers began to realize that Eastern attitudes towards suicide were radically different from theirs.

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understanding of this issue.

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The course of the war began to cause concern among the Japanese command, among which the question of the need to use ramming tactics in combat operations began to be discussed. Major General H. Masaki, who headed the 3rd Army Aviation Technical Laboratory, was instructed to study possible tactics for attacking enemy ships. The result of the study was the conclusion that in order to achieve the greatest efficiency, it is necessary to purposefully ram enemy ships with bomb-carrying aircraft. At the same time, it was said that Japan has a fairly large number of young people who are ready to give their lives for the emperor. It must be said that the system of indoctrination in the Japanese armed forces was such that many pilots almost until the end of 1942 did not take parachutes with them during a sortie, since leaving their aircraft was considered a sign of cowardice. The instructions for the moral education of a Japanese army soldier said: “You yourself are nothing. Your life belongs to the emperor." Death by order was considered the highest form of expressing one's love and devotion to the emperor.

In mid-July, H. Masaki's team prepared a secret report "Studying Anti-Ship Attacks Using Suicidal Tactics." The report, for example, provided evidence that to create a hole in the side, capable of incapacitating an enemy battleship or aircraft carrier, a bomb weighing about 1000 kg is needed, while a bomb weighing about 2000 kg is capable of sinking a ship of any class.

Vice Admiral T. Onishi and Admiral I. Yamamoto at a closed meeting formulated a plan according to which Japanese pilots would have to make suicidal rams when attacking allied ships. At the same time, Onisi's arguments looked like this: “There are only two types of aviators in the world - winners and losers. And while Japan suffers from a serious shortage of trained pilots, there is a remedy. If the pilot finds himself in front of an enemy ship or aircraft, having exhausted all his resources, then he still has the aircraft as an excellent weapon. And what could be more magnificent for a warrior than to give his life for the emperor and the country?

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It is known about T. Onishi that he graduated from the naval school in 1911, served in the first aviation units of the Japanese fleet during the First World War, then studied the tactics of air combat in England. After returning to Japan, he pursued a line of development and strengthening of military aviation. In 1939, Onisi became Chief of Staff of the 11th Air Fleet. He participated in the planning of the attack on Pearl Harbor and coordinated the air operation in the Philippines. Promoted to vice admiral in 1943, Onisi commanded the 1st Air Force in the Philippines.

However, the concept of planned suicide attacks had opponents in the Japanese General Staff, who believed that this step would be useless and lead to huge losses of people. Despite this opposition, Onishi insisted on the adoption of his plan, and as a result, at the highest level, albeit. reluctantly, it was decided to form special aviation units, which were headed by Generals Y. Shiroku and M. Sugawara. The motto of these units was: "One plane - one ship." Instructions were soon prepared for combat squadrons, outlining the methodology for carrying out suicide attacks, and preparations began to convert production aircraft into suicide aircraft.

The first attempt to carry out a pre-planned suicide attack took place on May 27, 1944. At 1700 hours, two specially equipped Kawasaki Ki-45 fighters, accompanied by five cover fighters, took off towards the island of Biak. They, having passed at a low altitude over the island, suddenly appeared off the coast with the aim of attacking the landing

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American landing. One of the Ki-45s was shot down by hurricane fire from coastal and naval anti-aircraft guns, but the second plane, deftly maneuvering, headed for the destroyer Samson. Near the destroyer, he was nevertheless shot down, but falling into the water, he touched the stern of the destroyer, and then exploded next to a small anti-submarine ship. The anti-submarine ship itself survived, but several people from its crew were killed in the explosion.

On June 19, Japanese aircraft attacked the battleship Indiana and damaged it. A week later, the commander

In the 1930s, Captain M. Okamura turned to Vice Admiral Onishi with proposals to start building specialized aircraft for suicidal attacks. An order was given to start training the corresponding aircraft — Ki-48 light bombers and Ki-67 heavy bombers.

On October 14, 1944, a Japanese aircraft damaged the Renault light cruiser with a ramming attack. Rear Admiral M. Arima was among those who were the first of the Japanese pilots to take on the task of mastering the tactics of suicide attacks. On his 46 M Zero, which had only one way fuel, he flew until he found an American aircraft carrier. The crew of the Franklin, which was the name of this aircraft carrier, watched in amazement as a lone plane flies closer and closer to their ship. Speculation arose among the crew that the pilot had died and the aircraft had lost control. However, the plane purposefully completed its flight by hitting the ship, this happened on October 16, 1944.

On October 17, 1944, the Allied troops began landing in the bay of Leyte Island. The First Air Fleet of the Japanese Navy, based in Manila, attempted to help Japanese ships destroy the American landing. However, only 40 aircraft remained in the Japanese air fleet: 34 ABM Zero fighters, three V6M torpedo bombers, one O4M bomber, two RTU bombers and one reconnaissance aircraft. Under these conditions, Vice Admiral Onishi decided to form a special detachment of suicide pilots. During a meeting with the staff of the 201st Naval Aviation Corps at the Margarut airfield near Manila, Onisi stated: “I don’t think there is any other way to accomplish the task, except to hang a 250-kg bomb on the Zero and let the plane crash into an American aircraft carrier to put the ship out of action for several weeks."

By October 20, 1944, the first “special assault detachment” was formed, consisting of 24 suicide pilots. This detachment, which was headed by Lieutenant Yu. Seki, was named “Kamikaze” (“kamikaze” in translation means “divine wind”). This was the name in Japan of typhoons, which in 1274 and 1281, according to legend, scattered the fleet

Mongol Khan Khubilai (grandson of Genghis Khan), who made an attempt to land on the territory of Japan. The Kamikaze detachment consisted of four squadrons of six aircraft each, the names of the squadrons were as follows: Shikishima (Japan), Yamato (Japanese Spirit), Asahi (Rising Sun)) and "Yamasakura" ("Mountain Cherry").

On October 21, the flagship of the Australian Navy, the heavy cruiser Australia, was attacked near Leyte Island by a Japanese aircraft carrying a bomb. The aircraft hit close to the captain's bridge, while the wreckage of the aircraft and burning fuel covered a large area of the deck. However, the bomb did not explode, and the fire was soon extinguished. As a result of this attack, about 30 crew members, including the captain of the ship, were killed, among the wounded was the commander of the Australian armed forces, D. Collins. On October 25, the cruiser Australia was again attacked from the air, after which it was towed to the New Hebrides for repairs. In January 1945, the repaired cruiser returned to continue combat operations; before the end of the war with Japan, she was subjected to kamikaze attacks six more times, which led to the death of 86 members of the ship's crew.

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In the period from 23 to 26 October 1944, Japanese squadrons attacked a formation of Allied ships consisting of 7 aircraft carriers and 40 escort ships near Leyte Island. Among the Japanese pilots, there were already 55 kamikaze pilots, this operation was the first operation in world history using the tactics of mass suicide attacks. On October 24, 5 Zero fighters discovered the American aircraft carrier Saint Lo. At 10.49, Lieutenant Yu. Shoki, who led the five kamikazes, gave a prearranged signal by banking his plane that it was time to attack, and threw the plane down. Two minutes later, the howlers on the USS Saint Lo began to work and anti-aircraft guns opened fire. Only one Japanese aircraft managed to break through to the target, which came out of a dive at a distance of about 1000 m and then headed for an aircraft carrier at an altitude of about 30 m above the water, as if the pilot intended to land on an aircraft carrier. One 20 mm and one twin 40 mm anti-aircraft guns fired at the Zero, but without any result. Calmly, without deviating, the pilot kept his plane straight ahead. At 10.52, a minute after discovery

by his command of the aircraft carrier, the plane dropped a bomb on the flight deck, rolled over, hit the deck and exploded near the port side. Its speed was such that the remains of the aircraft rolled, rotating, along the flight deck to the very bow of the ship. Fuel spilled over the deck when the plane crashed. At the same time, a bomb exploded, which, when falling, broke through the deck and got stuck in the hangar. The explosion of a kamikaze plane bomb caused a fire with subsequent explosions of ammunition on the aircraft carrier, after which the aircraft carrier sank. Killed 114 and wounded more than 300 people from the crew of the aircraft carrier. During the period of October 23-26, the Japanese sank 5 Allied ships, and damaged 35 ships (of which 23 ships were heavily damaged).

This was the first successful use of mass kamikaze attacks by the Japanese, so the attack technique remained the same for other kamikaze until the end of the war in August 1945. As a rule, allied warships, primarily aircraft carriers and transports. Three types of ship attack were worked out: perpendicular to the ship's course (horizontal and diving attacks). and on a collision course (frontal attack). The horizontal attack was as follows. After finding the target, the pilot dived at it from a height of 900-1200 m at an angle of 25-30°, aiming at the side of the ship. At a distance of about 700 m from the target, he transferred his aircraft to level flight at an altitude of 15-20 m above sea level and rammed the ship at a speed of 460-500 km / h. Any ship, being hit by a kamikaze aircraft, was at least temporarily out of order, and could sink. The dive attack was carried out without leveling the aircraft, the aircraft speed before impact was approximately 520 km/ h, and the angle of attack before impact on the side of the ship or its flight deck was 10-15°. The frontal attack was carried out from a height of 1500–2000 m at an angle of 30–40°.

Here is what one of the Japanese generals wrote about the morale of kamikaze pilots after the war: “We believed that our convictions and moral strength would balance the material and scientific superiority of the enemy. We did not consider our attacks to be suicide. The pilot flew on a mission not at all with the intention of committing suicide, that is, out of desperation and hopelessness, to sacrifice himself. He perceived himself as

a loveka-bomb that would destroy an enemy ship, and died happy, being sure that by his death, at least one step closer to the final victory. Indeed, the number of people who wanted to take part in suicide missions was three times higher than the number of aircraft available. But experienced pilots were not allowed on these missions, they were needed to train recruits to fly and carry out their suicide attack. As a result, most of the recruits were teenagers. However, not all Japanese pilots agreed with this strategy. So, for example, the pilot-ace of naval aviation Saburo Sakai, who survived the war, wrote in his memoirs: “According to our ancient military tactics, the essence of kamikaze lies in a surprise attack. Surprise attacks will be successful the first time,

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perhaps a second or third time. But who continues the same attacks for ten months? Emperor Hirohito should have understood this and stopped it."

On March 16, 1945, the Allies captured the island of Iwo Jima, ending a long air campaign. In response to this, on March 21, the Japanese used the Oka projectiles in combat for the first time. However, a formation of 15 Japanese O4M bombers carrying projectiles and escort aircraft was destroyed by American aircraft and naval anti-aircraft guns. Returning from a combat mission, American pilots reported that the downed Japanese bombers were carrying winged shells of an unknown type.

On April 1, the American battleship West Virginia and three transport ships were attacked and damaged by Okami. The next use of the Oka took place on 12 April. Taking into account the experience of previous attacks, this time the SAM bombers broke through to the target one by one and from different directions. One of the fired projectiles hit the gun mount of the battleship West Virginia, the destroyer Mannert Abil was sunk, and the cruiser Stanley and minesweeper Jeffers were also damaged. On May 4, after attacks using the Oka, the minelayer Shi and the minesweeper Gayty were damaged; on May 11, the destroyer Hugh Hadley was damaged.

The peak of kamikaze attacks occurred during the Battle of Okinawa. An essential feature of the defense of Okinawa was

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Variants of the aircraft "Oka"

the fact that the kamikaze was considered by the Japanese command from the very beginning as an integral part of the defense of the island. From March 25 to June 21, 1945, 1900 kamikaze attacks were recorded, during these attacks 250 ships were damaged, 34 of which sank. The largest number of suicide attacks were carried out during April 6 and 7, involving 355 Japanese
aircraft.

The American strategy for the use of aircraft carrier formations was adjusted due to the emerging threat from the kamikaze. Ships equipped with radars began to be placed in the outer environment, which provided long-range detection of kamikazes preparing to attack. Usually these were destroyers, patrol ships and minesweepers. It was believed that with sufficient detection, the ships would be able to disperse in time to prevent the threat of attack. These radar patrol ships took the brunt of the kamikaze attacks, because from the air inexperienced Japanese pilots often mistook them for battleships and cruisers.

One of these radar patrol ships underwent an amazing test in the waters of Okinawa on April 16, 1945. The destroyer Laffey under the command of Captain F. Beckton (later Rear Admiral) was assigned to the radar patrol under No. 1 that day.

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Within 80 minutes, this destroyer was subjected to 22 separate air attacks. The destroyer destroyed 8 of the attacking aircraft with the fire of its anti-aircraft installations, but nevertheless four bombs were dropped on it, and 6 aircraft managed to break through the barrage and make ram attacks. At the end of the battle, only four surviving 20-mm anti-aircraft guns fired on the ship. Here the main batteries were destroyed, the stern was almost under water, and the rudder was jammed. The destroyer's crew did everything they could to save their wrecked ship. As a result, it was possible not only to keep the destroyer afloat, but also to bring it under its own power to Seattle (Washington) for repairs. .Laffey remained in operation after the end of World War II.

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At the end of May 1945, the Joint Chiefs of Staff of the Allied Forces adopted the plan for Operation Po\up 1 ("Collapse"). According to this plan, the invasion of the Japanese islands was to be carried out in two stages. The first stage, the landing of allied forces on the island of Kyushu, was called O utr:s (“Olympic”), its start was scheduled for November 1, 1945, i.e. after the end of the typhoon season. The second stage, called Sogopei (“Diadema”), provided for the landing of troops on March 1, 1946, on the main territory of Japan - the island of Honshu.

The Japanese, preparing to repulse the Allied landings, adopted a defense plan called "Ketsu Go", according to which most of the responsibility for the effectiveness of defensive actions was assigned to the combined aviation of the army and navy. Japan was divided into fortified areas, in each of which camouflaged runways and hangars were built, in addition to this, a large number of aircraft were hiding in camouflaged parking lots, as well as in tunnels and caves.

Special strike units were formed, which were supposed to use everything that could at least somehow fly. These small disposable vehicles, loaded with powerful explosives, were supposed to be catapulted from the mountains and sent by pilots sitting in them to enemy ships. Ejection devices were supposed to be placed along the Pacific coast from Hokkaido to Kyushu, they had to be ready to start

the first stage of the planned landing of allied forces on the island of Kyushu. Specially trained kamikaze units were dispersed throughout the islands and kept in reserve. On one island of Kyushu, the Japanese had 35 camouflaged airfields and 9 seaplane bases, which were also supposed to be used in suicide attacks. In addition, 20 more runways with underground hangars were built in the southern part of the island.

The navy and army had 58 more airstrips in Korea, in the western part of the islands of Honshu and the islands of Shikoku, which were also to be used for mass suicide attacks. In August 1945 the Japanese still had 5,651 army and 7,074 naval aircraft. During July 1 alone, 131 new aircraft were built, and nearly 100 new underground aircraft assembly plants were in various stages of construction. Every village had something to do with aircraft building. Hidden work to prepare for the construction of new aircraft was in full swing in mines, railway tunnels, under viaducts and in the basements of institutions or department stores. |

In March 1945, the Japanese ordered 755 copies of the early models of the Oka projectile, which were launched from the carrier aircraft. By the summer of the same year, the Japanese were already building new models of the Oki, which were to be launched from catapults from caves on the island of Kyushu, they were intended for use against invasion ships, the approach time of which was to be calculated in minutes. On Okinawa, the kamikaze tactics proved ineffective, primarily because of the long distance to the targets. Okinawa was located 350 miles from Kyushu, so even experienced pilots taking off from the main islands of Japan died when they ran out of fuel or did not have enough flight time to select a suitable target. In addition, at the very beginning of the Okinawa campaign, the Americans organized an air defense system based on ground-based fighters, which, together with aircraft carrier aircraft, effectively resisted kamikaze attacks. During the proposed Olimpiysky operation, the situation must have been radically different. For kamikaze pilots, the flight range was sharply reduced, as a result of which they had a large number of

time to select a suitable target. On the contrary, for American air defense fighters, the time of duty in the air was reduced, since they had to return to Okinawa for refueling.
fuel.

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The choice of targets for the Japanese near Kyushu also differed from the choice of targets in the defense of Okinawa. If earlier the main targets for kamikazes were aircraft carriers and cruisers, then in the Olimpiysky operation they were supposed to be transports carrying American troops that were supposed to participate in the landing. The Japanese realized that they could kill many more Americans by sinking a single transport ship than they had previously done by sinking 30 cruisers. Their goal was to destroy thousands of Americans at sea, thus not giving up. the main forces to land on the islands of Japan.

When an invasion became imminent, the Kyotsu-Go plan called for an air attack on the Allied forces in four waves. While the Allied ships were approaching Japan, but were still on the high seas, the first wave of 2,000 army and naval fighters was to control the skies over Kyushu and counteract the attacks of B-29 bombers. The second wave of 330 specially trained naval pilots was to take off and attack the main forces of the Allied task force in order to deprive them of the ability to support the transports transporting troops with artillery fire and aircraft. At the same time, the third wave of 825 suicide aircraft was supposed to hit American transports on the high seas. As soon as the infiltrated convoys manage to approach their supposed anchorages, a fourth wave of 2,000 suicide planes would attack them in groups of 200 to 300 aircraft.

Since numerous kamikaze attacks in the battle of Okinawa did not stop the advance of the Americans, Vice Admiral Matome Ugaki, commander of the 5th air fleet, decided to atone for his guilt before the emperor and the kamikaze, who died on his orders. He ordered the planes to be prepared, intending to personally lead them in the final suicide attack. The attack was scheduled for August 15, 1945, the day the

the emperor's decision to end hostilities by Japan. As Ugaki walked towards his plane, 10 other planes were already warming up their engines on the runway. Ugaki told the squadron commander that he himself, as commander of the air fleet, would lead the squadron to attack.

Four of the eleven bombers that were part of his strike group could not take off due to engine failure, while the rest headed for the target of their last attack. Before crashing his plane, Ugaki radioed the following message:

“I alone should be blamed for the unsuccessful defense of our homeland and the inability to destroy a formidable enemy. The efforts of the officers and people who were under my command should be highly appreciated. I'm going to attack over Okinawa, where my men have fallen like cherry blossoms. Here I will crash into the arrogant opponent and destroy him in the true spirit of Bushido, with firm conviction and faith in Imperial Japan. I hope that the personnel of all formations under my command will understand the motives that guide me, will overcome all difficulties in the future, will work to restore our great homeland so that it prospers forever.

Long live His Majesty the Emperor!”

However, their mission was unsuccessful, and Ugaki's plane crashed into the Pacific Ocean without damaging any American ships. Late in the evening of August 15, T. Onishi, nicknamed Father Kamikaze, committed hara-kiri, the ritual suicide of a Japanese warrior.

By the end of World War II, the number of dead Japanese kamikaze pilots was 3,912. According to official Japanese data, as a result of kamikaze attacks, 81 American ships were sunk and 195 damaged. This accounts for about 80% of all US Navy casualties at the final stage of the war. American data are different: 34 ships sunk and 288 damaged.

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Below is a summary of the serial aircraft used by the Japanese as projectiles, as well as the machines specially designed for this purpose.

A5M

A prototype of the A5M bow fighter, developed by Mitsubishi, first took off on February 4, 1935. After the successful completion of military tests, the aircraft was put into service under the designation AZM1 (carrier-based fighter type 96 model 11) with the Nakajima Kotobuki engine - 2 Kai 1 with a capacity of 580 liters. s., he began to enter the fleet at the beginning of 1937.

In July 1937, a variant of the A5Mda aircraft with the Kotobuki-2 Kai ZA engine began to roll off the assembly line. These aircraft entered service with the 12th and 13th Kokutais who fought in China. With the expansion of hostilities in China, the development of new variants of the fighter has accelerated sharply. A variant of the A5 M2 (model 22) appeared with a Kotobuki-3 engine with a capacity of 640 hp. s., then A5 MZA with the Hispano-Suiza engine with a capacity of 610 hp. With. and 20mm cannon. The last option was AZM4 (model 42) with an additional 160-liter fuel tank. A total of 1095 copies of the A5M were produced (code designation of the allies STaÿde).

At the beginning of the Pacific War, A5 M4 fighters were in service with the Ryuyo, Zuiho, and Hoso aircraft carriers. They took part in the raid on Davao, covering the Japanese bombers, but then they were used exclusively in training and spare parts. A training version of the aircraft was also developed under the designation AZM4-K. The surviving A5M4 fighters were used for suicide attacks at the end of the war.

Characteristics of A5 M4: crew - 1 person, power plant - 1 Kotobuki-41 engine with a capacity of 785 hp. With. (585 kW), wing span - 11.0 m and its area - 17.8 m?, aircraft length - 7.57 m, height - 3.27 m, empty weight - 1216 kg, takeoff weight - 1671 kg, maximum speed - 430 km/h at an altitude of 3000 m, range - 1200 km, time to climb 5000 m - 8.5 min, service ceiling - 9800 m, armament - two 7.7-mm machine guns type 89 and two 30 -kg bombs.

ABM

In 1937, Mitsubishi, under the leadership of Jiro Honkoshi, began the development of the carrier-based fighter aircraft ABM Reizen (abbreviated from

"Reisiki zentoki" - "zero fighter"). A prototype under the designation AbMT, equipped with a Zuisei-13 engine with a power of 780 hp. s., made its first flight on April 1, 1939. During the tests, the aircraft demonstrated flight characteristics that corresponded to the terms of reference, with the exception of the maximum speed. As a result, the third experimental aircraft, which became the prototype of the A6M2 version, was equipped with a more powerful Nakajima Sakae-12 engine with a capacity of 950 hp. With. This machine, flown on December 28, 1939, showed better flight characteristics than expected.

The first 15 serial A6M2 vehicles (carrier-based fighter type 0 model 22) were sent in July 1940 to the 12th mixed kokutai for military trials in China. Having entered the battle for the first time on September 13, the A6bM2 fighters scored about 100 victories during the year of participation in hostilities, with their own losses of two fighters. At the start of the Pacific War, the Japanese fleet was armed with 328 AbM2 fighters. They participated in two major fleet operations: the raid on Pearl Harbor and the Philippines.

Modification of a fighter with a Sakae-21 engine with a power of 1130 hp. With. received the designation AbMZ (model 32). Combat units with A6MZ operated in the area of New Guinea, in the Coral Sea and Midway. However, they suffered heavy losses from the allied P-38, E40-1 and Spitfire fighters.

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Another modification with a turbocharger for the Sakae engine received the designation A6MA. However, the A6M5 version (type 0 model 52 carrier-based fighter) was produced in the largest quantity, which entered service in the fall of 1943. In March of the following year, the AbM5a variant went into production, followed by the A6M 56, and from September, the A6M. 5s. The Allies assigned the code designation yeke to the ABM fighter, but very often another designation was used that corresponded to the Japanese designation of the aircraft - "Zero".

Soon, the Japanese began to use ABM to carry out suicide attacks; in such an aircraft, a 250-kg bomb was hung on the ventral assembly instead of a tank. For suicidal attacks, other variants of the Zero were also involved, for example, the training A6M2-K. Until the end of the war in

Suicide attacks involved 1189 ABM fighters.

Characteristics of A6M5b: crew - 1 person, power plant - 1 Sakae-21 engine with a capacity of 1100 liters. With. (820 kW), wing span - 11.0 and its area - 21.3 m², aircraft length - 9.12 m, height - 3.51 m, empty weight - 1876 kg, takeoff weight - 2733 kg, maximum speed — 565 km/h at an altitude of 6000 m, range — 1143 km, time to climb 6000 m — 7 min, service ceiling — 11,740 m, armament — one 7.7-mm machine gun 97, one 13.2 -mm Type 3 machine gun, two 20mm Type 99 cannons and two 60kg bombs.

vom

In 1939, the Nakajima firm began developing the V6M carrier-based torpedo bomber. At the beginning of 1941 he made a

first flight prototype B6M "Tenzan" ("Heavenly Mountain") with the engine "Nakajima" "Mamoru" with a capacity of 1800 liters. With. During flight tests, it turned out that the aircraft has directional instability due to the occurrence of a large moment from the propeller. To compensate for this moment, the keel had to be set at an angle of 2 ° 10' to the left. Military tests of two experimental machines were carried out in 1942 from coastal airfields.

After testing on the Ryuho and Zuikaku aircraft carriers in the spring of 1943, the aircraft was put into production under the designation B6MI (type 3 model 11 carrier-based torpedo bomber), and by the end of July the company had delivered 65 aircraft. Serial aircraft differed from the experimental ones by reinforced tor-

, a powerful hook and attachments to the catapult on the landing gear. For takeoff with full load launch rocket boosters were used.

B6M1 (of which only 133 were built) were based on the aircraft carriers Sokaku, Teiho, Hiyo, Junyo and Zuikaku, they took part in the battle in the Philippines in June 1943. Many aircraft were lost due to the fact that the aircraft carriers Sokaku, Teiho and Hiyo
sunk by the allies.

Then the production of an improved version of the B6 M2 torpedo bomber began, in which the not very reliable Mamoru engine was replaced by the Kasei-25 engine. In October 1943, the company delivered the first 18 aircraft under the designation

B6ÿM2 model 12, after which the production of B6 M1 was discontinued. But the heavy losses among the Japanese aircraft carriers caused the majority of the LI aircraft (as the Allies called the B6M2) to deploy on coastal airfields. max, especially after the battle in Leyte Gulf. The company planned to produce a special coastal aircraft for use from unprepared airstrips V6 MZ. Two V6 M2 were converted into experimental V6MZ with Kasey-25s engines and reinforced landing gear with larger diameter wheels. However

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things did not go further than prototypes. At the end of the war, many B6M aircraft were used for suicide attacks. The total number of V6M aircraft built during the war years was 1268 aircraft, including 133 V6 M1 and 1133 V6 M2.

Characteristics of B6 M2: crew - 3 people, power plant - 1 Kasei-25 engine with a capacity of 1850 liters. With. (1380 kW), wing span - 14.89 m and its area - 37.2 mg, aircraft length - 10.87 m, height - 3.8 m, empty weight - 3010 kg, takeoff weight - 5650 kg, maximum speed - 481 km / h at an altitude of 4900 m, range - 1746 km, climb time 5000 m - 10.4 min, service ceiling - 9040 m, armament - one 13-mm machine gun type 2, one 7.7-mm machine gun type 97 and one 800 kg torpedo or up to 800 kg bombs.

OZA

Obsolete by the beginning of the war, the Aichi OZA carrier-based dive bomber was the first Japanese aircraft to drop bombs on American targets on December 7, 1941 during the attack on Pearl Harbor. In two waves, 129 dive-bombers started, achieving complete success.

The dive bomber was developed in 1936-1937, the first flight of a prototype equipped with a Hikari-1 engine with a power of 710 hp. s., took place in January 1938. Tests showed that the power plant was insufficient, in addition, the aircraft was unstable at high speeds, so the second prototype aircraft was seriously redesigned. They changed the profile and increased the wingspan, increased the take-off weight of the aircraft, and also strengthened the brake flaps. The Hikari-1 engine was replaced by the Mitsubishi Kinsei-3 engine with an 840 horsepower. With.

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According to the results of comparative tests of the YuZA and OZM (Nakajima) aircraft, which were won by the Aichi aircraft, in December 1939, serial production of the aircraft began under the designation RZAI (type 99 deck bomber model 11). Production aircraft had a smaller wing span and were equipped with a more powerful Kinsei-43 engine.

In 1940, the OZA1 aircraft passed military tests on the Akagi and Kaga aircraft carriers, after which the aircraft entered service with naval aviation units stationed in China, where they supported army units. A large number of OZA] were transferred to Indochina, where they, taking part in all the major operations of aircraft carriers in the first ten months of the war, sank a large number of allied ships. Among the victims of the OZA1 attacks, to which the Allies assigned the code designation Ma!, were English ships - Negtes (the world's first aircraft carrier sunk by a carrier-based aircraft), as well as the cruisers Sogima [and Rogse je.

However, significant losses among O3ZA1 during the battle in the Coral Sea in early May 1942 forced the Japanese to transfer the surviving vehicles to coastal bases. In early August, dive bombers ROSE! from the coastal units took part in the battle for Guadalcanal and suffered heavy losses. The reason for these losses was the fierce opposition of the Allied carrier-based fighters and the insufficient flight range of the dive bombers to cover 2000 km from Rabaul to the target and back.

Starting from August 1942, the O3ZA2 (type 99 model 22 carrier-based bomber) with an increased fuel capacity and a Kinsey-54 engine with a power of 1,300 hp began to be delivered. s., nok 1944, American fighters were already far superior in speed. A small number of production aircraft were subsequently used for suicide pilot attacks. For these purposes, the training version of the aircraft (2ZU2-K) was converted into a specialized assault version, without two 20-mm type 99 cannons and one 800-kg bomb, the main design difference of this version was the landing gear dropped after takeoff. It was planned to produce 30 such machines per month, but this production rate was not achieved before the end of the war. The total number of aircraft produced was 476 OZA! and 1016 OZA2.

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(some of which were converted into RZA2-K training bombers).

Characteristics of YuZÿA1: crew - 2 people, power plant - 1 Kinsey-43 engine with a capacity of 1000 liters. With. (746 kW), wing span - 14.38 m and its area - 34.9 m?, aircraft length - 10.2 m, height - 3.85 m, empty weight - 2570 kg, takeoff weight - 3800 kg, maximum speed - 430 km / h at an altitude of 6200 m, range - 1352 km, time to climb 3000 m - 5.76 min, service ceiling - 10,500 m, armament - two 7.7-mm machine guns type 97, one 7.7 -mm machine gun type 92, one 250-kg bomb under the fuselage and two 60-kg bombs under the wing.

p4Y

Prototype of a carrier-based bomber rau! The Suisei (Comet), built by the 1st Naval Aviation Arsenal in Yokosuka, first flew in December 1941.
use as a dive bomber, the aircraft was equipped with three brake flaps, in
It was armed with three machine guns and could carry up to 560 kg of bomb load. According to the test results, the aircraft was put into service under the designation 24U1-S (type 2 model 11 carrier-based reconnaissance aircraft). Small arms were retained, but the bomb racks were removed, in addition, the Atsuta engine with a capacity of 1200 hp was installed. With.

The U4Y1-S reconnaissance aircraft was ordered into series at the Aichi plant; in the late spring of 1942, the first mass-produced vehicle left the assembly line. Part of the 24U aircraft was built in the version of a dive bomber, 174 aircraft were delivered to the 1st, 2nd and 3rd separate sentai, based on 9 aircraft carriers in the Philippine Sea. The aircraft, codenamed Ladu by the Allies, saw combat for the first time in February 1944 near Truk Island. However, they fought without much success and suffered heavy losses, because they were easily intercepted by American fighters.

In the spring of 1944, a new version 04Y? with an Atsuta-32 engine with a capacity of 1400 hp. with., produced in party modifications. A large number of aircraft of this version were lost in the battle for the Philippines, therefore, to make up for losses, 04-2 was connected to the production

11th Naval Arsenal in Hiro, which delivered 215 aircraft from April 1944 until the end of the war. A small number of aircraft produced by this arsenal were converted into Rau2-5 night fighters. The bomber equipment was removed from this modification, and a 20-mm cannon was installed in the rear of the fuselage for firing forward at an angle to the horizon. However, the low rate of climb of the machine has become the main reason for its low efficiency when performing interception tasks.

Reliability problems with the Atsuta-32 engine led to its replacement in the new version of the R4Y3 aircraft by the Kinsei-62 engine. The first 24UZ aircraft was built in May 1944, and by September of the same year, only this version of the aircraft remained in production, produced by Aichi and the 1st Naval Arsenal in two modifications, Yu4-Z and R4uz. From February 1945, the production of a new version began - a single-seat aircraft for suicide pilots Yu4-4 (special naval attack bomber model 43), which could carry an 800-kg bomb in a semi-submerged position. The total number of Yu4Y aircraft built was 2038.

Characteristics 24U3: crew - 2 people, power plant - 1 Kinsey-62 engine with a capacity of 1560 liters. With. (1163 kW), wing span - 11.5 m and its area - 22.8 m?, aircraft length - 10.22 m, height - 3.75 m, empty weight - 2501 kg, maximum takeoff weight - 4657 kg, maximum speed — 575 km/h at an altitude of 6,050 m, range — 1,520 km, time to climb 3,000 m — 4.55 min, service ceiling — 10,500 m, armament — two 7.7 mm machine guns, one 13.1 mm machine gun and two 560 kg bombs.

ETC

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E7K biplane reconnaissance hydroplane, created by Kawanishi, equipped with a Hiro engine with a capacity of 520 hp. pp., first took off in 1933. The following year, serial production of the E7KI version (reconnaissance seaplane type 94 model 11) began. Four years later, tests began on a prototype of the E7K2 version with a more powerful Zuisei-11 engine. E7K2 serial reconnaissance aircraft (code designation

allies

kov AG) were based on the aircraft-carrying ships Chitose, Chiyoda, cruisers Mikuma, Furutaka, Kako, Kitakami, Kuma, etc., and were also in service with the 19th Kokutai and kokutaev "Chinkai" and "Kure". At the end of the war, the surviving E7K vehicles were used for suicide attacks during the Battle of Okinawa. The total number of E7K1 and E7K2 versions built before 1939 was 530 aircraft.

Characteristics of E7K2: crew - 3 people, power plant - 1 Zuisei-11 engine with a capacity of 870 hp. With. (649 kW), wingspan - 14.0 and their area - 43.6 m², aircraft length - 10.5 m, height - 4.55 m, empty weight - 2100 kg, take-off weight - 3300 kg, maximum speed - 277 km/h at an altitude of 2000 m, time to climb 3000 m - 9.1 min, service ceiling - 6250 m, armament - three 7.7-mm machine guns type 92 and four 30- kg bombs or two 60 kg bombs.

ETZA

In 1937, the Aichi company began developing a three-seat reconnaissance seaplane E1ZA (the code name for the Allies was Jake). Prototype equipped with a Kinsei-43 engine with a capacity of 1060 hp. s., was completed at the end of 1938, after participating in competitive tests with the E13K aircraft of the Kawanishi company in December 1940, it was launched into a series under the designation "night reconnaissance seaplane marine type 0 model 11". The first machines were delivered to Japanese cruisers, the following year, these seaplanes, equipped with one 250-kg bomb, carried out several raids on the Hankou-Canton railway. In December 1941, E1ZA1 aircraft carried out reconnaissance, accompanied by the 8th cruiser detachment, which was going to attack Pearl Harbor. After the pace of aircraft production increased, battleships began to be equipped with them, including the Haruna battleship of Vice Admiral Nagumo.

The result of a combat operation sometimes depended on the effectiveness of reconnaissance aircraft. So, for example, due to problems with the ship's catapults, there was a delay in the takeoff of one of the four E13A1 aircraft launched in search of American aircraft carriers at dawn on June 4, 1942, which deprived the Japanese of the necessary initiative.

you are at the very beginning of the Battle of Miduz. In addition, the ETZA!1 reconnaissance aircraft from the Chikumas cruiser was forced to return early due to an engine failure, significantly reducing a very important search area. One of the other scouts, taking off from the cruiser Tohne, eventually spotted the American fleet, but failed immediately to report the presence of aircraft carriers, causing a further 30-minute delay in the preparation of aircraft awaiting orders to take off from the Japanese aircraft carriers. When the Americans launched the first wave of their attack aircraft, they found that the decks of the Japanese aircraft carriers Akagi, Kaga, Soryu and Hiryu were packed with aircraft that were just getting ready to take off to attack the American fleet.

In total, it is estimated that more than 250 E13A aircraft were based aboard Japanese ships in mid-1943, although their use was reduced whenever American fighters appeared in the air. E1ZA planes were produced in various modifications, including those with a magnetic submarine detection system, the remaining machines during the battle on Okinawa were used for suicide attacks on allied ships.

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The total production of E13A aircraft during the war amounted to 1418 copies, of which 133 aircraft were built by Aichi, 48 aircraft by Dai-Yuchi Kaigun Kokuso and 1237 aircraft by Kyushu.

Characteristics of ÿ1ÿÿ: crew - 3 people, power plant - 1 Kinsei-43 engine with a capacity of 1000 hp. With. (746 kW), wing span - 14.5 m and its area - 36.0 m?, aircraft length - 11.45 m, height - 4.7 m, empty weight - 2642 kg, takeoff weight - 3640 kg , maximum speed - 376 km / h at an altitude of 2180 m, cruising speed - 222 km / h, range - 2089 km, climb time 3000 m - 6.1 min, service ceiling - 8730 m, armament - one 7.7- mm machine gun and 250 kg bombs.

ETba

In May 1942, the Aichi company built a prototype of the E16A1 Zuyun (Lucky Cloud) seaplane, which was intended for use as a reconnaissance or dive bomber. airplane, by

which received the designation "reconnaissance seaplane sea experimental", had an all-metal construction, with the exception of wooden wingtips and fabric covering of control surfaces. The Mipubisi Kinsei-51 engine with a capacity of 1300 hp was used as a power plant. With. Production aircraft were equipped with air brakes and had folding consoles for easy storage of the aircraft on board. EI6AI reconnaissance aircraft (reconnaissance seaplane marine type 3 model 11) entered service in August 1943, then aircraft with a Kinsei-54 engine with a power of 1300 hp began to arrive. with., the production of these aircraft was established by the Nippon Hikoki company. A variant of the aircraft under the designation E16A2 with a Kinsei-62 engine with a capacity of 1560 hp. With. Until the end of the war, he did not have time to complete flight tests. At the end of the war, the surviving E16A1 vehicles were used for suicide attacks during the battle for Okinawa. The total number of produced E16A1 aircraft (code designation Rush) was 256 copies.

Characteristics of E16A1: crew - 2 people, power plant - 1 Kinsey-54 engine with a capacity of 1300 liters. With. (969 kW), wing span - 12.8 m and its area - 28.0 m?, aircraft length - 10.83 m, height - 4.74 m, empty weight - 2713 kg, takeoff weight - 3800 kg, maximum speed - 448 km / h at an altitude of 5500 m, cruising speed - 352 km / h, range - 2535 km, time to climb 5000 m - 10.0 min, practical ceiling - 10,290 m, armament - two 20- type 99 mm cannon, one 13 mm type 2 machine gun and 250 kg of bombs.

myself

Developed by Mitsubishi in accordance with the technical requirements of 1937, the C4M medium bomber made its first flight on October 23, 1939. During the tests, a maximum speed of 444 km/h and a range of about 5500 km (without bomb load) were achieved.

The first two pre-production S4MI (sea bomber type 1 model 11), equipped with Kasei-11 engines with a capacity of 1340 hp each. s., were delivered in January 1941, and in April the delivery of mass-produced vehicles began. Initially, C4MI bombers were used in China in the summer

1941, but soon they were transferred to Indochina. In December of the same year, they, together with the C3M2 bombers, sank the warships Ripse og Mnales and Kershe. The Allies gave the O4M bomber the code designation Be(u.

It must be said that on February 1, 1942, the first suicide attack in the Pacific War took place with the participation of O4M1. On that day, seven C4MI bombers attacked an American

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aircraft carrier Etegrpwe, but by the joint efforts of anti-aircraft artillery and fighter escorts of the aircraft carrier, all Japanese aircraft were shot down. However, one of the bombers still managed to reach the aircraft carrier and fell on it, damaging the deck.

The experience of the very first months of the war showed that the unprotected fuel tanks of the C4MI aircraft were very vulnerable in combat. It was for this reason that on April 18, 1943, Admiral Yamamoto and his staff were killed flying on two O4M1 bombers attacked by R-38 fighters. The modified version of the C4MI model 12 received sealed tanks and a system for pressurizing the tanks with exhaust gases from the engine exhaust. In addition, new Kasey-15 engines were delivered, which allowed the aircraft to fly higher to avoid the possibility of damage from light air defense systems.

The new version of S4M2 model 22 received enhanced armament, increased fuel capacity and Kasei-21 engines. This version remained in production until the end of the war, in addition to it, modifications of O4M2A, S4M2V, S4M2S and S4M2O were produced. With the advent of the kamikaze aircraft MHU7 "Oka", the C4M2 bomber was chosen as its carrier. The design of the carrier, which received the designation C4M2E, was improved: the wings were removed from the bomb bay, holders were installed for attaching the Oka in a semi-recessed position under the fuselage of the carrier. On March 21, 1945, 35 SAMBE bombers carrying Oka projectiles made an attempt to break through to the American carrier formation approaching Kyushu. However, American Hellcats intercepted them, and the attack failed. The attempted suicide attack was successful for the Japanese on April 12, when the C4M2E managed to deliver the Oka to the target, causing heavy damage to the destroyer 5{epeu. By the end of the war, the production of the S4MZ model 34 version with reinforced cockpit armor began. Total

during the war years, 1200 copies of C4MI, 115404M2 and 60 a4M3 were produced. In small quantities, C4M was used directly in suicide attacks.

Characteristics of S4M? 2: crew - 7 people, power plant - 2 Kasei-21 engines with a capacity of 1800 liters. With. (1342 kW), wing span - 25.0 m and its area - 78, 13 m?, aircraft length - 20.0 m, height - 6 m, empty weight - 8160 kg, takeoff weight - 12,500 kg, maximum speed - 438 km/h at an altitude of 4600 m, range - 6059 km, time to climb 8000 m - 32.4 min, service ceiling - 8950 m, armament - two 20-mm guns type 99, four 7.7-mm machine gun type 92 and one 800-kg torpedo or up to 1000 kg of bombs.

lm

In May 1941, for the first time, a prototype long-range escort fighter ÿ1M1, created by the Nakajima firm, took off for the first time. Tests of two experimental machines by the fleet showed that the LM! inferior to the A6M2 fighter in all respects, with the exception of flight range. In October 1941, the firm was asked to convert the vehicle into a shore-based reconnaissance version. The modified aircraft successfully passed flight tests in July 1942, after which it was put into production under the designation ÿ1M1-S (sea reconnaissance type 2 model 11C) and began to be delivered to the troops from April 1942. When the Allies first encountered the Solomon Islands Jillian Su, they identified it as a fighter and gave it the code name Iguine.

As soon as the Americans intensified the night bombardment of Japan, the commander of the 251st Kokutai, Yasuna Kozono, proposed using the LM aircraft as a night fighter, installing two 20-mm cannons in the observer's cockpit at an angle of 30 ° for forward-upward firing and two cannons for forward firing. -down. When a fighter equipped in this way shot down two American B-24 bombers, the headquarters of the Navy became interested in this proposal and placed an order with Nakajima for the production of a night fighter 1 M1-5 "Gekko" ("Moonlight"). The production of the fighter began at the plant in Koizumi in August 1943. Fighter J1M1-5

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differed from the earlier version of the reconnaissance by a crew reduced to two and the installation of additional

filament guns for shooting up and down. In addition, a radar was installed in the forward fuselage, and on some machines a searchlight was installed. Later, down-firing cannons were abandoned for the reason that fighters rarely managed to get over the formation of bombers, in addition, there were difficulties with aiming. The JEM1-5 night fighters of the 251st, 302nd, and 322nd Kokutais proved effective against B-24 bombers, which were not well adapted to night attacks. With the advent of the B-29, the Japanese night fighters, which did not have a sufficiently high speed, were unable to make more than one attack on the formation of bombers.

The production of fighters continued until December 1944, during the war 479 copies of 1 M were produced, most of which were ÿ1M1-5. Many night fighters were lost in the last months of the war, when they, equipped with two 250-kg bombs, began to be used.
call for kamikaze attacks.

Characteristics ÿ1M1-5: crew - 2 people, power plant - 2 Sakae-21 engines with a capacity of 1130 hp each. With. (843 kW), wing span - 16.98 m and its area - 40.0 m, aircraft length - 12.77 m, height - 4.56 m, empty weight - 4840 kg, maximum takeoff weight - 8185 kg, maximum - speed - 505 km / h at an altitude of 5840 m, range - 2540 km, time to climb 5000 m - 9 min 36 s, practical ceiling - 9320 m, armament - two (sometimes three) 20-mm cannons for firing up, two 20mm cannons to fire down and one 20mm cannon to fire forward.

Ki-15

In July 1935, the army issued a task to develop a reconnaissance aircraft, after which the development of the Ki-15 aircraft began at Mitsubishi. The first flight of the prototype took place in May 1936, during flight tests the aircraft demonstrated good performance and reached a speed of 481 km/h at an altitude of 4050 m. 15-[(reconnaissance aircraft army type 97 model 1).

The second prototype of the aircraft, which received the civil designation "Karigane"-1 ("Wild Goose") and the registration number J-BAAI, made an ultra-long flight from Japan to England on April 8-9, 1937. The aircraft covered a distance of 15,315 km in 94 hours and 17 minutes, of which the actual flight time was 51 hours and 17 minutes. In May 1937, the delivery of mass-produced vehicles to the troops began.

At the very beginning of the war with China, the Ki-15-1 aircraft, equipped with the Na-8 engine, operated quite successfully. However, with the advent of the Soviet I-16 fighters among the Chinese, it was decided to modify the reconnaissance aircraft by installing the Na-26-1 engine on it. This version entered the army aviation in September 1939 under the designation Ki-15-P. In 1938, the fleet, interested in this aircraft, ordered 20 aircraft under the designation C5MI (reconnaissance marine type 98 model 1). The fleet subsequently purchased another 30 C5M2 machines, which differed only in the installation of a new Sakae-12 engine with an HP 950 power. With. By the end of production, almost 500 machines of all versions had been built.

With the outbreak of the Pacific War, the Japanese army and navy used the Ki-15-P and S5M2 in Southeast Asia. The reconnaissance aircraft, which was assigned the code designation Vabz by the Allies, was used for another year, but then was withdrawn from the combat units and transferred to the second line units. Many surviving aircraft at the end of the war were used in the Philippines and Okinawa for suicide attacks.

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Characteristics of the Ki-15-[: crew - 2 people, power plant - 1 Na-8 engine with a capacity of 477 liters. With. (357 kW), wing span - 12.0 m and its area - 20.36 m?, aircraft length - 8.7 m, height - 3.35 m, empty weight - 1400 kg, takeoff weight - 2300 kg, maximum speed - 480 km / h at an altitude of 4000 m, cruising speed - 320 km / h at an altitude of 5000 m, range - 2400 km, service ceiling - 11,400 m, armament - one 7.7-mm machine gun.

Ki-21

The Ki-21 aircraft was developed by Mitsubishi in accordance with the terms of reference of the Army Aviation Headquarters. The first of two built prototypes took off on December 18, 1936, the first production version of the Ki-21-Ta (heavy

bomber army type 97 model 1A} arrived at the end of 1939 in the 60th sentai, based in China. The fighting showed that the bomber had insufficient firepower and armor protection. Therefore, the Ki-21-No. and Ki-21-1s versions were produced, equipped with additional armor, an additional 7.7 mm machine gun, increased fuel tanks and an enlarged bomb bay. As a power plant, Na-5 engines with a capacity of 850 hp were used. With.

Bomber sentai, based in Japan, Korea and Manchuria, by the beginning of the war received Ki-21-I vehicles with more powerful Mitsubishi Na-101 engines. On the morning of December 8, 1941, the 14th and 62nd Sentai from the 5th Air Group, based in Taiwan, flew out on a combat mission to the area of Luzon Island (Philippines). Ki-21 aircraft from the 12th, 60th and 98th Sentai of the 3rd Air Group, based in Indochina, were intended for the bombing of Thailand and Malaya. Escorted by Ki-27 and Ki-43 fighters, they defeated the airfields and naval bases of the British in Alor Star, Sungei Patani and Butterworth. In 1941-1942. The Ki-21 was used extensively by the Japanese, but they suffered heavy losses during raids on Rangoon in December 1941 and January 1942. Soon, most of the Ki-21-1a, Ki-21-Pb and Ki-21-Shs aircraft were already in units of the second line or served as training bombers.

The remaining vehicles at the end of the war were used for special purposes. For example, on May 24, 1945, with the participation of 9 Ki-21-P converted into transport aircraft, a sabotage action was carried out against American bomber aircraft, which by that time had already been based in Okinawa. Each of the Ki-21-1 planes carried a group of suicide paratroopers specially trained to destroy enemy aircraft at home airfields. Only one car managed to break through to the target and land on the Yentan airfield. Before the guards of the American airfield managed to destroy the paratroopers, they managed to blow up 7 and damage 2 B-29 bombers, set fire to a warehouse with fuel and lubricants and undermine a large amount of ammunition. The total number of built bombers Ki-21 (the code designation of the allies SaPu) amounted to 2064 copies.

Characteristics of the Ki-21-16: crew - 5 people, power plant - 2 Na-101 engines with a capacity of 1500 hp each. With. (1119 kW), wing span - 22.5 m and its area - 69.6 m?, aircraft length - 16.0 m, height - 4.85 m, empty weight - 6070 kg, takeoff weight - 10 610 kg, maximum: speed - 486 km / h at an altitude of 4720 m, cruising speed - 380 km / h, range - 2700 km, time to climb 6000 m - 13 min 13 s, service ceiling - 10,000 m, armament - one 12.7 -mm machine gun type 1, five 7.7 mm machine guns type 92 and up to 1000 kg of bombs.

Ki-27

The first experimental Ki-27 fighter of the Nakajima firm took to the skies on October 15, 1936. For military trials, the army ordered 10 pre-production samples of the Ki-27, which were delivered from June to December 1937. After testing was completed at the end of 1937, the aircraft was launched into mass production under the designation Ki-27a (army type 97 fighter model A).

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In March 1938, Ki-27a fighters appeared in the skies of China; as new aircraft appeared, they were equipped with the 4th, 5th, 11th, 13th, 59th and 64th Fighter Sentai. As serial production began, the Ki-27a was replaced by a modification of the Ki-27, which featured a cockpit canopy with improved visibility and a modernized oil cooler. In addition, attachment points were added under the center section, on which four 25-kg bombs or two 130-l drop fuel tanks could be hung. The production of Ki-275 was also established at the Manshu Hikoki Seizo company. A total of 3,399 Ki-27s were produced, including 1,379 manufactured by Manshu.

During the armed conflict in the region of the Khalkhin-Gol River in the summer of 1939, Ki-27 aircraft, consisting of five fighter sentais, fought against Soviet fighters. The Ki-27 aircraft, having superiority over the I-15bis and I-153, however, were inferior in speed characteristics to the I-16 fighter, from which they suffered significant losses. At the beginning of the Pacific War, Ki-27 fighters (the original code name for the allies of Abai, and then "Ma! E"), consisting of the 1st, 11th, 50th, 54th and 77th sentai took part in the invasions in

ev.

Burma, Malaya, the Dutch East Indies and the Philippines. But then they began to be replaced by more advanced Ki-43, Ki-44 and Ki-61 aircraft. The Ki-27 remained in the Air Defense Forces of Japan until 1943, after which they began to be used as training aircraft. At the end of the war, the surviving vehicles carrying up to 500 kg of bomb load were used for kamikaze attacks.

Characteristics of the Ki-27a: crew - 1 person, power plant - 1 Na-No. engine with a capacity of 710 hp. With. (529 kW), wing span - 11.31 m and its area - 18.55 m?, aircraft length - 7.53 m, height - 3.25 m, empty weight - 1110 kg, maximum takeoff weight - 1790 kg, maximum speed - 470 km / h at an altitude of 3500 m, range - 1710 km, climb time of 5000 m - 5.36 min, practical ceiling - 12 250 m, armament - two 7; 7-mm machine guns type 89.

Ki-30

Mitsubishi developed the Ki-30 light bomber, which first flew on February 28, 1937, it was equipped with a Mitsubishi Na-6 engine. Despite the good performance shown during aircraft testing, the second prototype was equipped with a more powerful Nakajima Na-5 engine. This vehicle exceeded the targets set in the terms of reference in 1936, so the army immediately ordered the first batch of 16 vehicles. They were put to military trials in January 1938, and two months later the Ki-30 went into production.

The use of Ki-30 bombers (military type 98 light bomber) in China was quite successful, since during the raids they operated under the cover of Ki-27 fighters. The situation was the same at the very beginning of the Pacific War, when bombers escorted by fighters operated against the allies from bases in the Philippines. But as soon as the required flight ranges increased, and the bombers began to fly out on missions without fighter escort, the Ki-30 aircraft immediately began to suffer heavy losses, and soon the surviving aircraft were transferred to units of the second line. Several machines were transferred to the Thai Air Force, the days were used in January 1941; against: French troops in Inlo

China. The total number of Ki-30 (Allied code designation APP) bombers built at the moment. the end of production in 1941 amounted to 704 copies; at the end of the war, some of the bombers were used for kamikaze attacks.

Characteristics of the Ki-30: crew - 2 people, power plant - 1 Na-6 engine with a capacity of 950 liters. With. (708 kW), wing span - 14.55 m and its area - 30.58 m?, aircraft length - 10.35 m, height - 3.65 m, empty weight - 2230 kg, takeoff weight - 3220 kg , maximum speed - 423

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km/h at an altitude of 4000 m, cruising speed - 380 km/h, range - 1700 km, service ceiling - 8570 m, armament - two 7.7-mm machine guns type 89 and up to 450 kg of bombs.

Ki-32

In May 1936, Kawasaki began developing the Ki-32 light bomber. In March of the following year, 8 experimental machines were flight tested, but. tests were accompanied by frequent engine failures, which forced the redesign of the power plant.

In July 1938, serial production of the aircraft began under the designation Ki-32 (military type 98 light single-engine bomber). According to its characteristics, the bomber was considered obsolete by the beginning of the war, but in December 1941 Ki-32 aircraft were still used in combat units, in particular during raids on Hong Kong. Soon all the remaining vehicles were transferred to training units, but in the Philippines and Okinawa they were used in suicide attacks, for which a 250-kg bomb was hung on the plane. The total number of Ki-32s built (the allied code for Magoo) was 850.

Characteristics of the Ki-32: crew - 2 people, power plant - 1 Na-9-P6 engine with a capacity of 850 hp. With. (634 kW), wing span - 15.0 m and its area - 34.0 m?, aircraft length - 11.64 m, height - 2.9 m, empty weight - 2349 kg, maximum takeoff weight - 3762 kg, maximum speed - 423 km / h at an altitude of 3940 m, range - 1960 km, climb time 5000 m - 10.9 minutes, practical ceiling - 8920 m, armament - two 7.7-mm machine guns and up to 450 kg bombs.

Ki-43

The development of the Ki-43 Hayabusa (Sapsan) light fighter project began at Nakajima in 1937; an order for mass production of the Ki-43-{a aircraft (military type 1 model 1A fighter) equipped with a Na-25 engine and two 7.7 mm machine guns. Deliveries of the fighter to combat units began in June 1941, in August the 59th and 64th Sentai were re-equipped with it. At the beginning of December 1941, Ki-43-Ja fighters supported the landings of Japanese troops in Malaya and Thailand, covered groups of Ki-21 bombers and stormed the Allied airfields. The initial successes of the Ki-43-[a] were impressive. For example, Major Ya. Kuroe from the 64th Sentai scored 22 air victories on it, Senior Sergeant S. Anabuki from the 50th Sentai scored 30 victories in 173 sorties within 18 months. Moreover, on October 8, 1943, S. Anabuki shot down two American B-24 bombers in an air battle in a Ki-43-Ga fighter, after running out of ammunition he rammed a third aircraft, and then made an emergency landing on a regu of Burmese

bay.

Soon the production of the Ki-43-ÿ5 modification began, in which one 7.7-mm machine gun was replaced by a 12.7-mm machine gun No-103, and then the Ki-43-1s modification, which had two machine guns -103. However, as soon as the allies came to their senses after the first defeats and studied the weaknesses of the Ki-43-1, the situation changed - the Japanese fighters began to suffer more and more losses. The Japanese response was the appearance of the Ki-43-Pa fighter-bomber (code designation Ozsag or ÿÿt) by armoring the pilot's seat, protecting the fuel tanks with sheet rubber and a more powerful engine, which made it possible to increase the upper speed limit. In addition, aircraft of this version could carry up to 500 kg of bombs or drop fuel tanks.

In November 1942, mass production of the Ki-43-1 version began at Nakajima, and Tachikawa Hikoki joined the production six months later. In May 1944, work began on an experimental batch of 10 Ki-43-Pa vehicles with a Na-115-P engine with a capacity of 1190 hp. s., which allowed to develop a speed of 576 km/h. In 1944 aircraft

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of this version in a small number entered the troops. At the end of the war, especially during the battle for Okinawa, Ki-43s were widely used as kamikaze aircraft. They were also used against the Soviet troops advancing in Manchuria. The total number of Ki-43s produced during the war years was 5886 aircraft.

Characteristics of Ki-43-P6: crew — 1 person, power plant — | Na-115 engine with a capacity of 1150 liters. With. (858 kW), wing span - 10.84 m and its area - 21.4 m?, aircraft length - 8.92 m, height - 3.27 m, empty weight - 1910 kg, maximum takeoff weight - 2925 kg, maximum speed - 530 km/h at an altitude of 4000 m, range - 1760 km, time to climb 5000 m - 5.8 min, service ceiling - 11,200 m, armament - two 12.7-mm machine guns and two 250- kg bombs under the wing. .

Ki-45

In early 1937, Kawasaki received an order from the army to develop a long-range twin-engine fighter. The first model of the Ki-45 Toryu (Dragon Slayer) two-seat fighter took off in 1939. Due to engine problems, production of the aircraft began only in September 1941 under the designation Ki-45 Kai (a) (two-seat fighter army type 2 model A). The armament of this version included one 20 mm cannon, two 12.7 mm machine guns and one 7.92 mm machine gun, the aircraft could carry two drop tanks or two 250 kg bombs under the wing.

The fighter entered service in August 1942 with the 5th sentai, which initially served as a unit for retraining pilots on the Ki-45. The Ki-45 first saw action in October 1942 as part of the 21st Sentai, based in Burma, and the 16th Sentai, which arrived in China a month later. At that time, Japanese aviation had air superiority over the allies, so the Goryu, which received the code name MSK from the allies, was often used for anti-ship and assault operations, in which this aircraft achieved significant success.

Soon a new version of the Ki-45 Kai(B) appeared; specially designed to fulfill the role of an attack aircraft. Standard

The new armament of this version included one 20 mm cannon in the nose, a forward firing 37 mm cannon in the fuselage and one 7.92 mm machine gun for firing backwards, in addition, there were _ hardpoints for dropped tanks or bombs. When testing the aircraft, various orcs were evaluated, including a 75-mm cannon for attacking sea vessels.

The Ki-45 Kai (a) was enough for its time

well armed and proved effective against the American B-24 bombers, which led to the creation of the Ki-45 Kai(s) night fighter, which became one of the most successful Japanese aircraft in this category. The first serial aircraft Ki-45 Kai(s) was assembled in April 1944, and at the beginning of 1945 such machines, equipped with one gun for firing forward and two guns for firing forward-upward, were already in service with the 53- go sentai. In parallel with the Ki-45 Kai(s), the production of the anti-ship version of the Ki-45 Kai(d) began, in which the armament included two 20 mm cannons in the nose, one ventral 37 mm cannon, and one 7.92 mm machine gun. and two 2500 kg bombs. The effectiveness of the use of the Ki-45 aircraft during night interceptions of allied bombers was demonstrated, in particular, by Lieutenant S. Kimura, who on the night of June 14/15, 1944 shot down two B-29 bombers and damaged three more, and on the night of 27-28 March 1945, having made three sorties, shot down five B-29s and damaged two more. Sergeant N. Negishi, who flew the Ki-45, by the end of the war had 6 shot down and 7 damaged B-29s. Some early versions of the Ki-45 were modified in the field to carry out suicide attacks. The Ki-45 remained in service until the end of the Pacific War at ten

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sentai, the total production of the aircraft was 1701 copies, they were used to protect Tokyo, in Manchuria, Burma and Sumatra. At the end of the war, the aircraft was used for ram attacks against Allied bombers. One of the Ki-45 aircraft sank a Soviet minesweeper boat KT-152 with a ramming attack, the last victim of a kamikaze in World War II.

Characteristics of the Ki-45 Kai(s): crew - 2 people, power plant - 2 Mitsubishi Na-102 engines with a capacity of 1080 hp each. (805 kW), wingspan = 15.05 mi ege area - 32.0 m², aircraft length - 11.0. m; height —'3;7m;:

empty weight - 4000 kg, maximum takeoff weight - 5500 kg, maximum speed - 545 km/h at an altitude of 7000 m, range - 2000 km, time to climb 5000 m - 6 min 7 sec, service ceiling - 10 000 m, armament - three 20-mm nushki and two 250-kg bombs or two hanging tanks under the wing.

Ki-48

Work on the Ki-48 light bomber at Kawasaki began in January 1938. The aircraft was equipped with two Nakajima Na-25 engines with a capacity of 950 hp each. with., the crew consisted of four people. The aircraft was put into service in the summer of 1940 under the designation Ki-48-1a (light twin-engine bomber army type 99 model 1A).

The first mass-produced vehicles left the assembly line in July 1940, and soon they entered service with the 45th Sentai, which took part in the hostilities in North China in the fall. There, the aircraft, which did not have serious opposition from the Chinese Air Force, was used not only as a front-line bomber, but also as a long-range and night bomber. By June 1942, 557 vehicles of the Ki-48-Ta and Ki-48-16 variants with more powerful weapons were produced, which were in service with the 8th, 27th, 75th and 90th Sentai operating in Burma, Malaya, in East Indies and the Philippines. The Allies assigned the bomber the code designation Shu.

An improved version of the Ki-48-11, put into production in the spring of 1942, had a longer fuselage, sealed fuel tanks, armored crew seats, an increased bomb load, and more powerful Na-115 engines. into service, it became clear that its speed characteristics were not very good and it had inadequate defensive armament. Many aircraft were lost in the air and on the ground during the fighting in New Guinea, so in October 1944 the Ki-48 was taken out of service. The remaining vehicles were used in the Philippines and as night fighters over Okinawa, but the main use was for suicide attacks. Such aircraft received

the value of the Ki-48-P Kai (special army attack aircraft type 99). In this version, all unnecessary equipment was removed from the aircraft, and the control system, designed as standard for two pilots, was converted to single control. One bomb weighing 800 kg was installed in the bomb bay, and a long rod of the fuse percussion mechanism was mounted in the nose of the aircraft.

In 1944, four Ki-48-Pb were modified for testing the 1Oo-1B guided bomb. The total number of Ki-48 bombers built was 1977.

Characteristics of the Ki-48-PY: crew - 4 people, power plant - 2 Nakajima Na-115 engines with a capacity of 1150 hp each. With. (858 kW), wing span - 17.45 m and its area - 40.0 m?, aircraft length - 12.75 m, height - 3.8 m, empty weight - 4550 kg, maximum takeoff weight - 6750 kg, maximum speed - 505 km/h at an altitude of 5600 m, range - 2400 km, service ceiling - 10,100 m, armament - three 7.7-mm machine guns and up to 800 kg of bombs.

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Ki-49

The Ki-49 Donryu (Storm Dragon) medium bomber was developed by Nakajima in early 1938 to replace the Ki-21 bomber. The first prototype aircraft, which took off in August 1939, was equipped with two Nakajima Na-5 Kai engines with a power of 950 hp each. s., Nakajima Na-41 engines with a capacity of 1250 hp were installed on pre-production machines. With. In March 1941, the aircraft was put into service under the designation Ki-49-1 (army type 100 heavy bomber model 1).

In February 1942, the 61st Sentai in China was re-equipped with Ki-49-1 vehicles (codename Nejep). Later, this bomber was widely used in battles over New Guinea, and also carried out raids over Northern Australia. By that time, it became clear that the engine power was insufficient. In addition, seven or eight crew members were very cramped in the narrow fuselage of the aircraft. Therefore, in the spring of 1942, work began on the modernization of the bomber, and already in August, the Ki-49-Pa (heavy bomber army type 100 model 2A) went into production with
engine

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mi "Nakajima" Na-109 with a capacity of 1450 liters. with., reinforced armor and protected fuel tanks. Then came the Ki-49-[version with 12.7 mm machine guns. The Ki-49-Pa and Ki-49-PY aircraft were part of the 7th and 61st Sentai in China in the summer of 1942, and were also in service with the 12th Sentai of the 3rd Air Army operating in Burma.

After the Allies landed in the Philippines, the Ki-49 aircraft, which were actively used in combat, began to suffer heavy losses. The greatest damage was inflicted on the units of the 4th Air Army in New Guinea due to the constant attacks by the allies of Japanese airfields. From March to December 1943, 6 bombers of the Ki-49-ShSh version were built, equipped with Na-117 engines with a power of 2420 hp each. With. Ki-49 planes were also used for special missions. So, for example, Ki-49-1s were equipped with a magnetometer to search for submarines, and some Ki-49-Pas were used as landing aircraft or night fighters.

The total production of the Ki-49 during the war years amounted to 819 aircraft. After the defeat in the Philippines, the Japanese increasingly began to use the surviving Ki-49s for suicide attacks on Allied shipping. For this purpose, all weapons were removed from the aircraft, the crew was reduced to two people, and the bomb load was increased to. 1600 kg.

Characteristics of the Ki-49-Pa "Donryu": crew - 7 (8) people, power plant - 2 Na-109 engines with a capacity of 1450 hp. With. (1081 kW), wingspan - 20.42 m and its area - 69.05 mg, aircraft length - 16.5 m, height - 4.25 m, empty weight - 6530 kg, maximum takeoff weight - 11,400 kg, maximum speed - 492 km/h at an altitude of 5200 m, cruising speed - 350 km/h, range - 2950 km, time to climb 5000 m - 13 min 39 s, practical ceiling - 9300 m, armament - one 20 mm cannon, five 7.7 mm machine guns and 1,000 kg of bombs.

Ki-51 r

On the basis of the Ki-30 light bomber, Mitsubishi developed the Ki-51 aircraft intended for use. as an attack aircraft or reconnaissance. As a power plant, the machine had a Mitsubishi engine.

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si "Na-26-P with a capacity of 940 liters. With. In the summer of 1939, two prototypes were tested, after which a pre-production batch of 11 aircraft was built and tested by the end of the year. In the attack aircraft version, the armor of the engines and cockpit was reinforced, in the reconnaissance version (Ki-51a), a camera was installed in the rear of the cockpit.

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Initially, the Ki-51 (army type 99 attack aircraft) was used in combat operations in China, then, with the outbreak of the Pacific War, it was used against the allies. The experience of combat operations showed that the rather slow Ki-51 often became easy prey for Allied fighters when trying to attack aircraft carrier formations, but in some operations, especially where they had to take off from unsuitable sites, this aircraft quite effectively supported its troops. In the final stages of the war, the Ki-51 (code designation Spia) with one 250-kg bomb under the fuselage was used for kamikaze attacks. During the war years, Mitsubishi built 1,459 Ki-51 aircraft, and another 913 aircraft were produced by the Mei Aviation Arsenal in Tachikawa.

Characteristics of the Ki-51: crew - 2 people, power plant - 1 Na-26-1 engine with a capacity of 940 liters. With. (701 kW), wing span - 12.1 m and its area - 24.0 m ", aircraft length - 9.2 m, height - 2.73 m, empty weight - 1873 kg, take-off weight - 2920 kg, maximum speed - 425 km/h at an altitude of 3000 m, range - 1060 km, service ceiling - 8270 m, armament - two 7.7-mm machine guns and up to 400 kg of bombs.

Ki-36/Ki-55

In May 1937, the Army Aviation Headquarters announced a competition for the development of a close support aircraft. The Mitsubishi Ki-35 and Tachikawa Ki-36 projects were presented for the competition, as a result, the headquarters ordered the construction of a prototype of the Ki-36 aircraft. A prototype equipped with a Hitachi Na-13 engine made its first flight on April 20, 1938.

» The aircraft was put into production in November 1938 under the designation Ki-36 (army type 98 close support aircraft). Being generally similar to the prototype, the series

107:

This aircraft had two 7.7 mm machine guns and a more powerful Hitachi Na-13a engine. Production was launched at Tachikawa in November 1938, and in 1940, Kawasaki was connected to its production.

The Ki-36 aircraft, codenamed Cha by the Allies, was initially used in China, and quite successfully. However, at the beginning of the Pacific War, it turned out that it was too vulnerable to allied aircraft, so in 1943 all Ki-36s were returned back to China. By the time the program was terminated in January 1944, 1,334 vehicles had been built (862 on Tachikawa and 472 on Kawasaki).

The handling characteristics and reliability of the Ki-36 have shown it to be an ideal aircraft for use as a trainer. After testing the prototype in September 1939, the army ordered this aircraft under the designation Ki-55 (military type 99 advanced flight training aircraft). In addition to military training units, the Ki-55 was also used in civilian schools that worked under military contracts. In addition, the Ki-55 was supplied to Thailand. Its production was completed in December 1943, the total number was 1389 vehicles (Tachikawa - 1078 and Kawasaki - 311). In the last year of the war, the Ki-36 and Ki-55 were used by kamikaze pilots, for this purpose the aircraft carried one 250-kg or 500-kg bomb.

Characteristics of the Ki-36: crew - 2 people, power plant - 1 engine Na-1Za with a capacity of 510 liters. With. (380 kW), wing span - 11.8 m and its area - 20.0 m², aircraft length - 8.0 m, height - 3.64 m, empty weight - 1247 kg, maximum takeoff weight - 1660 kg, maximum speed - 348 km / h at an altitude of 1800 m, cruising speed - 235 km / h, range - 1235 km, practical ceiling - 8150 m, armament - two 12.7-mm machine guns and 150 kg of bombs .

Characteristics of the Ki-55: crew - 2 people, power plant - 1 Na-13a engine with a capacity of 510 liters. With. (380 kW), wingspan - 11.8 m and its area - 20.0 m?, aircraft length - 8.0 m, height - 3.64 m, empty weight - 1292 kg, takeoff weight - 1721 kg, maximum speed - 349 km / h at an altitude of 2200 m, cruising speed - 235 km / h, range - 1060 km,

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time to climb 3000 m - 6.9 min, practical ceiling - 8200 m, armament - one 7.7-mm machine gun and 250 kg of bombs.

Ki-67

The Ki-67 "Hiryu" ("Flying Dragon") medium bomber was designed to replace the Ki-21 and Ki-49 aircraft in accordance with the assignment issued to Mitsubishi in November 1940. The aircraft, developed under the direction of Ozawa, was equipped initially Mitsubishi Na-100 engines. Three prototypes were completed between December 1942 and March 1943, first flying on 27 December 1942.

_ perform some figures aerobatics.

Bombers Ki-67-[(heavy bomber army type 4 model 1) in the summer of 1944 took part in the fighting in China, in the north-west of New Guinea and Sumatra. After that, the Ki-67-1, which the Americans gave the name Rerru, fought with the allies in the Philippines, near Iwo Jima, Saipan, Tinyan and Okinawa.

Although the Ki-67-1 was originally intended for army aviation, the navy immediately became interested in it. At the beginning of January 1943, the company received an order for the construction of 100 Ki-67 aircraft in the torpedo bomber version, the first samples of which entered service with the 762nd Kokutai in the autumn of 1944, these aircraft were especially active near Taiwan and in the Okinawa region. .

At the end of the war, the bomber was used for suicide attacks, while all small arms were removed from the aircraft, and the crew was reduced to 3 people. In the first version, the aircraft, which received the designation Ki-67 Kai, carried two 800-kg bombs (one in the bomb bay, the other in the cockpit behind the pilot's seat) or a special 2900-kg charge with a fuse on a long rod placed forward. In the second version, which was given the designation Ki-167, a Sakuradan thermite bomb weighing 2900 kg was installed directly behind the cockpit. Since the bomb did not fit into the contours of the fuselage, since it towered half a meter above the fuselage, it was covered with a fairing from above. The first samples of Ki-167 were ready in February 1945, for the first time the Japanese used them on April 17 in the Okinawa region. Of the three vehicles that took off on a mission, two vehicles returned to the base without finding the target. The pilot of the third car detonated his bomb, apparently unable to due to combat damage.

aircraft to return to their base. During another sortie, Ki-167 vehicles went missing.

By the end of the war, two aircraft of the Ki-67-N variant with more powerful engines were built, while the total number of Ki-67-Ts produced for the army and navy was 698 copies. In addition to the Mitsubishi company, they were produced at the factories of the Kawasaki, Tachikawa and Nippon Kokusai companies.

Characteristics of the Ki-67-1: crew - 6-8 people, power plant - 2 Na-104 engines with a capacity of 1900 hp each. With. {1417 kW), wing span - 22.5 m and its area - 65.85 m?, aircraft length - 18.7 m, height - 7.7 m, empty weight - 8649 kg, takeoff weight - 13 765 kg, maximum speed - 537 km / h at an altitude of 6000 m, cruising speed - 400 km / h, range - 3800 km, time to climb 6000 m - 14 min 30 s, practical ceiling - 9470 m, armament - one 20-mm cannon, four 12.7 mm machine guns, 800 kg of bombs or one torpedo.

Ki-79

Since January 1943, the Manchurian firm "Manshu Hikoki Seizo" began mass production of the Ki-79 training aircraft. Developed on the basis of the Nakajima Ki-27 fighter,

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The Ki-79 aircraft was produced in the single-seat modification Ki-79a with the Na-13a engine, the two-seat modification Ki-7% and the single-seat modification Ki-79s with the more powerful Na-23 engine.

Until the end of the war, they served in many sentai, and were also used in flight schools and for training instructors. Ki-79s were used in army youth flight schools, which until the end of the war trained flight personnel for "special assault units" of army aviation, that is, kamikaze pilots. For kamikaze attacks, Ki-79s were equipped with one 250-kg bomb under the fuselage. During the war years, 1379 copies of the Ki-79 were built.

Characteristics of the Ki-79a: crew - 1 person, power plant - 1 Hitachi Na-13a engine with a capacity of 510 hp. With. (380 kW), wing span - 11.5 m and its area 18.56 mg, aircraft length - 7.8 m, empty weight - 1300 kg, maximum speed - 340 km/h, range - 920 km, armament - one 7.7-mm machine gun type 89 and one 250-kg bomb.

110;

Ki-115

On January 20, 1945, the Nakajima firm received an order from the army to develop a disposable aircraft for kamikaze pilots. The Ki-115a “Tsuryugi” (“Saber”) aircraft, developed under the guidance of Aori Kunihiro, turned out to be as simple as possible. The design feature of the aircraft was that any of the produced engines could be used as its power plant, the pilot race

relied in an open cockpit. The bomb load consisted of one bomb, the non-retractable landing gear was dropped immediately after takeoff. It was planned to quickly organize mass production of the new model at numerous small enterprises.

The first experimental aircraft took off in March 1945, but its characteristics turned out to be unsatisfactory, and the landing gear had to be modified. After completion of flight tests in June 1945, an order was placed for the manufacture of 104 aircraft. These vehicles were supposed to be equipped with solid rocket boosters to accelerate the vehicle before hitting the target. Two aircraft as samples were transferred to the company "Owl Hikoki KK" for the construction of a batch of machines under the designation "special attack aircraft Toka" ("Wisteria Flower"). It was planned to install exhausted engines on these machines.

A variant of the Ki-115b with a wooden wing and a cockpit shifted forward, as well as a simplified version of the Ki-230, were also developed, but not a single aircraft of these versions was built before the end of the war. In total, until August 1945, 105 Ki-115a machines were manufactured, which did not have time to take part in the hostilities.

Characteristics of the Ki-115a: crew - 1 person, power plant - 1 Nakajima Na-35 engine with a capacity of 1130 liters. With. (843 kW), wing span - 8.6 m and its area - 12.4 m?, aircraft length - 8.55 m, height - 3.3 m, empty weight - 1640 kg, maximum takeoff weight - 2880 kg, maximum speed - 550 km/h at an altitude of 2800 m, cruising speed - 300 km/h, range - 1200 km, armament - one bomb weighing 250 or 800 kg under the fuselage.

Ki-119

At the beginning of 1945, the technical requirements for a light bomber intended for kamikaze pilots were formulated. The aircraft had to be simple to manufacture, easy to maintain and control, and carry a combat load. In March, Kawasaki received an order to develop a bomber. In less than three months, designers led by Takeo Doi and Yui Kitano developed a draft design and built a mock-up of the aircraft.

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In the design of the aircraft, units from already produced aircraft were used to the maximum extent: wide landing gear with powerful shock absorbers from the Ki-102, fuze lage and most of the equipment from the Ki-100, etc. e. The airframe of the aircraft was to be manufactured at several dispersed factories, and then assembled at an underground factory located in a tunnel near Misunami.

The first flight of the experimental machine was scheduled for September 1945, but most of the drawings were lost during the Allied raid on Kagamigahara in June 1945. Despite this, the Kawasaki company prepared a new set of drawings; hoping to finish the aircraft by November 1945, but the surrender of Japan interrupted work.

Characteristics of the Ki-119: crew - 1 person, power plant - 1 engine with a capacity of 2000 liters. With. (1492 kW), wing span - 14 m and its area - 31.9 m', aircraft length - 11.83 m, height - 4.5 m, empty weight ——— 3670 kg, maximum takeoff weight - 5980 kg, maximum speed - 580 km / h at an altitude of 6000 m, range - 1200 km, armament - two 20-mm cannons and one bomb weighing 800 kg under the fuselage.

"Ta-Go" |

A group of officers led by Captain Mizuyama Yashiyuki put forward the idea of creating the simplest aircraft for suicide attacks, which could be built in

any handicraft workshop from available materials. Hidden in tunnels, under viaducts, in any room, a small device with folding wings could quickly rise into the air and dive on the target along with a 100-kg bomb suspended under the fuselage.

In the summer of 1945, the development of this aircraft, named Ta-Go, began at the Kokusai firm near Kyoto. The design of the aircraft was carried out without any regard for aerodynamics, the wooden-metal structure was covered with canvas, the machine had an open cockpit and

'powerful engine Na-47. The prototype kamikaze aircraft was built very quickly and flown around on 25 July. However, many problems emerged that needed to be addressed in order for the aircraft to perform the simplest tasks.

years. During a raid by American aviation, the workshop where the aircraft was located was destroyed, until the surrender of Japan, production was not restored.

MXX7

In the summer of 1944, Japanese Naval Staff seriously considered for the first time the concept of using suicide attack tactics. A draft design for a manned projectile, developed under the direction of officer Mitsuo Ota of the 405th Kokutai, was transferred to the 1st Naval Arsenal at Yoko Suka for detailed study. The completed vehicle, which received the designation ÿÿÿ7 “Oka” (“Cherry leaf”) (sea special attack aircraft “Oka” model 11), was a small aircraft without landing gear, equipped with three solid-propellant rockets with a total thrust of 800 kgf in the tail section fuselage and 1200-kg warhead in the bow. The S4M2 bomber was supposed to be used as a carrier aircraft. However, the dimensions

"Oka" with accelerators

"Oka" mode 22

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the projectile was not allowed to be placed in the bomb bay, so the carrier was modified, for which the doors were removed and the length of the compartment was increased. The modified bomber received the designation C4M2e. "Oka" was attached in a semi-recessed position in the bomb bay in front of the cockpit.

The cockpit of the Oka was equipped with a minimum of instrumentation, which consisted of an altimeter, a speedometer, a compass, an angle of attack sensor and a simple frame sight, the aircraft was controlled using a conventional aircraft stick. The fuselage was made of aluminum alloys, the wing and tail were made of wood. It was supposed to launch the device from a carrier aircraft at an altitude of up to 8000 m and a distance of 50-80 km from the target. At a distance of about 40 km from the target, the pilot of the projectile aircraft had to turn on the power plant, the operating time of which was 8-10 seconds, after which the device, having accelerated, had to reach the target and attack it.

By September 1944, ten MHU7 machines were ready. Non-motorized flights began in October 1944, the next month tests were already carried out with the inclusion of rocket boosters. Without waiting for the end of the tests, the fleet ordered the serial production of the aircraft, and by March 1945, 755 Oka model 11 vehicles were built. C4M2e tried to break through to the target, but were intercepted by American fighters and forced to release projectiles into flight too early. On April 1, the American battleship West Virginia and three transport ships were attacked and damaged by Okami. Other suicide attacks have also had limited success. The vulnerability and insufficient carrying capacity of the carrier aircraft, which were supposed to deliver the aircraft close enough to the target, forced the production of the Model 11 to be curtailed in March 1945. The MXU7 manned projectile had the Allied code designation Waka.

A project was developed for the projectile "Oka" model 22 for the R1U1 or R1UZ carrier aircraft. The Model 22 featured a smaller wing span than the Model 11 and a warhead weighing only 600 kg. In order to increase the flight range of the projectile, it was decided to equip it with a Tsu-11 compressor jet engine driven by a piston engine. Tests in July 1945 showed that the thrust of the power plant was small, so after the release of 50 copies of the "Oka" model 22 at the factories of the company "Aichi" its production was stopped.

The Oka Model 33 was an enlarged version of the Model 22, equipped with a Ne-20 turbojet engine and an 800 kg warhead. For this variant, it was supposed to use the O8M1 bomber as a carrier aircraft. But delays in the development of the carrier caused the cessation of work on the Model 33.

To launch from catapults, model 43 was developed in two versions of the Oka, equipped with a Ne-20 turbojet engine. The Model 43A, designed to be launched from submarine catapults, had to have folding wing panels for placement in the boat's hangar. Model 438 was similar to model 43A, but was intended for coastal defense units. After launching from a model 438 catapult, in order to achieve maximum

speed could drop the wingtips. By the end of the war, the first sample of model 438 was in assembly, in addition, they managed to build several machines of the training version of the projectile - “Wakasakura” (“Fresh Cherry”) model 43 K-1 KAI. On this machine, the warhead was replaced by a second cockpit, flaps and a landing ski were installed, and one rocket booster was installed in the rear fuselage.

Other variants were also in development: Model 11 with a steel wing developed by Nakajima, Model 21 (Model 22 airframe with an engine from Model 1) and Model 53 with a Non-20 engine, which was to be delivered to the target in tow by plane.

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Characteristics of the "Oka" model 11: crew - 1 person, power plant - three rocket boosters "type 4 mark 1 model 20" with a thrust of 800 kgf, wingspan - 5.12 m and its area - 6.02 m?, length aircraft - 6.07 m, height - 1.16 m, empty weight - 440 kg, flight weight - 2140 kg, warhead weight - 1200 kg, maximum horizontal speed

ta - 650 km / h, maximum speed during a dive - 927 km / h, range - 37 km.

Characteristics of the Oka model 22: crew - 1 person, power plant - Tsu-11 compressor engine with a thrust of 200 kgf, wingspan - 4.12 m and its area - 4.02 m, length - 6.88 m, height — 1.15 m, empty weight — 545 kg, warhead weight — 600 kg, flight weight — 1450 kg, maximum speed — 480 km/h, maximum dive speed — 800 km/h, range — 88 km .

Characteristics of the Oka model 43V: crew - 1 person, power plant - TRD Ne-20 with a thrust of 475 kgf, wingspan - 9.0 m and its area - 13.0.m², length - 8.16 m , height - 1.15 m, empty weight - 1150 kg, warhead weight - 800 kg, flight weight - 2270 kg, maximum speed - 557 km/h, range - 189 km.

"Bayka"

As mentioned above, representatives of the Japanese command were acquainted with the process of building the German Reichenberg projectile in Dannenberg. In 1944, the Japanese received the Agess Az 014 PUVRD, which was delivered from Germany by submarine. Received dwi

gatel was studied at the Institute of Aeronautics at the University of Tokyo under the guidance of professors Ichiro Tani and Taichiro Ogawa, after which the development of the Japanese analogue of the PUVRD called the Ka-10 began. At the beginning of August 1945, the Kawanishi firm received an order to build an “experimental naval special attack aircraft” called “Bayka” (“Plum Blossom”), in the bow of which a combat charge was to be placed. Two options for installing the Ka-10 engine were considered - above the fuselage and under the fuselage. The task was to build a prototype by the end of September, and in December 1945 to begin mass production of aircraft for suicide attacks. However, until the end of the war, work did not progress further than prototypes.

Characteristics of the Baik: wingspan - 6.6 m, aircraft length - 7.0 m, empty weight - 750 kg, warhead weight - 100-259 kg, maximum speed - 556 km/h.

5. BOMBER BALLOONS

In early 1942, the United States was still humiliated by the Japanese attack on Pearl Harbor and the continuing string of Japanese victories. The American command considered that a small victorious operation was needed, which could raise the morale of the American troops. As a result, the headquarters of the Navy proposed to strike Japan with army bombers that would take off from aircraft carriers. Army aircraft were proposed because the short range of carrier aircraft would force the task force to move 200 miles closer to the coast of Japan, and it would be exposed to intense enemy counterattacks. It was recommended to use on the aircraft carrier the recently entered service B-25 MisPe] bombers, which, having taken off from the aircraft carrier, would carry out a bomb attack on Tokyo. The flight was planned only in one direction with a landing in the deep regions of China, not yet occupied by the Japanese. General Henry Arnold, Commander-in-Chief of the US Army Air Corps, appointed Lieutenant Colonel James Doolittle as group commander.

The biography of D. Doolittle is quite interesting. In September 1922, he made a flight across the entire territory of the United States, spending 22 hours and 30 minutes on it. He graduated from the University of California and received a degree from the Massachusetts Institute of Technology. In 1925 he won the prize

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Schneider for the record flight in a straight line at an average speed of 374.3 km/h during testing of the seaplane Sig 15$ EZS-2. At the age of 28, James Doolittle was already considered the most

qualified and highly educated test pilot in the United States. In February 1930, Doolittle retired from the Army Air Corps and went to work for the 5th Parachute Corporation, where he coordinated the company's aviation departments in San Francisco, St. Louis, and New York. In addition, he continued to participate in aviation shows and competitions. In January 1940, Doolittle was appointed president of the Institute of Aeronautical Sciences, one of the most prestigious and influential technical societies of the time in the world, but this did not satisfy him enough. Doolittle wanted to be active in flying, so he got re-enlisted in the army. On July 1, 1940, he returned to flying service and was sent to Great Britain on an inspection trip, during which he conducted evaluation tests of the new B-26 Magadeg aircraft.

Lieutenant Colonel Doolittle selected a group of volunteers to take part in the flight. Since the Japanese patrol ships ` were usually stationed at a distance of 500 miles (926.5 km) from the Japanese islands, the B-25B bombers had to take off at a range of 550 miles (1019.15 km) to ensure the secrecy of the operation. All unnecessary equipment was removed from the aircraft, and additional fuel tanks were installed instead to bring the flight range to 2,000 miles (3,706 km). Each aircraft carried four 500-pound (226.8 kg) bombs, 12.7-mm machine gun turrets were removed from them to save weight. In addition, part of the radio equipment was removed, and the expensive bombsight was replaced with a primitive improvised device. Two tangas were welded on the tail of each aircraft, which were supposed to represent machine guns.

The plan called for Lieutenant Colonel Doolittle's lead aircraft to drop firebombs on Tokyo to start fires. Focusing on their flames, after 3 hours, 12 more aircraft will drop bombs, and the 3 remaining bombers will attack Nagoya, Kobe and Osaka. After the attack, the planes were supposed to fly to China and land on airfields belonging to the troops of Chiang Kai-shek. Later, the bombers were to operate as part of the Allied Air Force in China. Since none of the volunteer pilots has yet taken off in a B-25 bomber with

aircraft carrier

CA, February 3, 1942, training flights of two aircraft took place from the deck of an aircraft carrier. On April 2, 1942, the aircraft carrier Nogpe left San Francisco! with 16 B-25B bombers on its flight deck. Nogpei linked up on 13 April with the USS Yethgrise, which was providing air cover, forming the 16th task force. In addition to two aircraft carriers, this formation included four cruisers, eight destroyers and two tankers.

The Japanese, after analyzing the data of radio intercepts, guessed that the Americans were preparing some kind of operation. The joint headquarters of the Japanese fleet ordered the naval aviation to concentrate in the Tokyo area, as well as to put the Coast Guard patrol vessels on alert. Early on the morning of April 18, about 650 miles from the Japanese coast, one of the Japanese patrol ships sighted the American squadron. Although the Americans quickly sank it, but, given the likelihood of a watchdog transmitting an alarm signal by radio, the commander of the 16th operational formation, Admiral W. Halsey, urgently revised the original plan, which provided for the take-off of the bombers at noon on April 19, and ordered the group take off immediately. Doolittle's plane took off first at 8:20 am on April 18, and the last plane took off at 9:20 am, after which the group headed for Tokyo. Immediately after the last plane took off, the carrier formation turned around and left the area at full speed, fearing a Japanese attack. At

The bomber raid took the Japanese by surprise, as they assumed that in order for the bombers to take off, American aircraft carriers would have to approach the coast at a distance

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about 200 miles, that is, they expected an attack later. The bombers were not intercepted by fighters over Japan, and only one of them was shot down by anti-aircraft artillery fire. The raid caused little material damage to the Japanese, so it was useless from a military point of view. However, American propaganda claimed that this raid was of great moral importance for raising the morale of American soldiers, and also forced the Japanese to reorganize the air defense structure to protect Tokyo and other Japanese cities from possible American air raids. Doolittle for this raid was presented for a medal and

promoted immediately to brigadier general. Doolittle was then sent to Europe to command the 4th Bomber Wing, later he was appointed commander of strategic aviation in North-West Africa (Mogÿÿmÿÿ Alsap. Sÿgÿgerÿs ap Eogsÿ — MAZAR). Finished the war in the Pacific.

The American public, seized by the euphoria of the Doolittle raid, did not know that all the bombers participating in the raid, with the exception of one, were lost, because the fuel reserves were not enough to reach the areas of China not occupied by the Japanese. The crews either left the plane by jumping out with a parachute, or made an emergency landing with damage to the car. Of the 75 crew members of these aircraft, 5 people died and 10 were captured by the Japanese. The prisoners were subsequently accused by the Japanese authorities of bombing civilian targets, three of them were executed, and one pilot died in prison. Part of the pilots, including Doolittle, managed to get out of the occupied areas. the Japanese. However, the raid caused the Japanese to carry out a punitive action in China, as a result of which about 250,000 Chinese were killed. As for the surviving American bomber, having bombed it, it turned off the planned course towards the territory of the Soviet Union and landed safely near Vladivostok.

The Doolittle raid on Tokyo in the spring of 1942 unwittingly set off a series of events that led to one of the more bizarre stories of World War II: the Japanese attempt to punish the Americans for the raid by attacking the US mainland with barrage balloons. The Japanese prepared for this operation in the deepest secrecy. The balloon attack concept was the brainchild of the Japan 9th Army Research Laboratory, which was led by Major General S. Kusaba.

In fairness, it should be noted that the Japanese were not the first to use balloons to bombard enemy territory. In 1848, the citizens of Venice pushed back the Austrians who had occupied Italy and declared. independent Republic of Venice. This did not suit the Austrians, who decided to use force, but at the same time:

faced difficulties. The main difficulty was that large siege weapons could not be placed near the city. Then the Austrian Lieutenant Uchtaius suggested using balls made of paper and filled with hot air to throw explosive charges into the city. Such balloons were made, each balloon could carry a 15-kg charge with a fuse, the respective teams chose a place to launch the balloons.

Here is how Seeep s Atepsal described in 1849 the preparation of kataka, referring to the Viennese press: “Venice must be bombarded with balloons, since the lagoon prevents the artillery from approaching to bombard the city. Balloons, each twenty-three feet in diameter, are under construction at Treviso. With favorable winds, the balloons will be launched and directed towards Venice, and as soon as they reach the city, they will be set in motion by an electrical signal given along a long wire from a large battery of batteries located on the shore. The bombs should fall down and explode when they hit the ground."

On August 22, 1849, the Austrians launched about 200 balloons. This raid did not cause significant material damage to the Italians, although one of the bombs exploded in the square.

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Saint Mark. Moreover, an unexpected change in wind direction brought some of the balloons back to the Austrian lines, after which their use was discontinued.

In February 1863, Charles Perley of New York received a patent for an unmanned bomber, which was a balloon filled with hot air, the balloon carrying a basket containing a bomb and a synchronization mechanism as a payload. The timer was supposed to set the hammer in motion after a predetermined time, thereby opening the bottom of the basket to release the bomb. When the basket was opened, the bomb fuse was also _ who knocked out the lock rod, cocked. The Perley mechanism required the measurement of wind speed in order to accurately set the time counter. Of course, the aerial bomber must be lifted directly to windward of the target. However, the project was not implemented.

When developing the Japanese concept of bombing the US territory with the help of balloons, it was taken into account that

the circumstance that at heights of more than 9 km over Japan in winter there are air currents of high speed moving eastward, i.e. towards the American continent. The bottom line was that the balloon, having risen to a height of more than 9 km, is picked up by a strong air flow and moves across the Pacific Ocean, covering a distance of more than 8,000 km in three days. Such balloons could carry bombs to the United States and drop them there to destroy people, buildings, and set fire to forests. Thus, the Japanese wanted to take revenge on the Americans for the massive raid of B-25 bombers on Tokyo and other Japanese cities in the spring of 1942. translate as "fire balloon". Sometimes even in the literature there is the name "fu-go".

Creating a balloon that could cross the Pacific Ocean with a payload and then automatically attack the target was a technically difficult task. The balloon was supposed to be filled with hydrogen. In flight, hydrogen expands during the day, heating up from the sun and causing the balloon to rise higher, and then cools down at night, and the balloon loses height. Japanese engineers invented an automatic system for maintaining a given flight altitude, controlled by an altimeter, which allowed the balloon to stay in the stream moving to the east all the time. When the balloon dropped below 9 km, then, according to an electrical signal from the altimeter, the squib fired a certain amount of ballast. Sandbags suspended from an aluminum wheel were used as ballast, and two symmetrically located bags with to maintain the balance of the balloon.If the balloon rose above 11.6 km, then the altimeter signal opened the hydrogen bleed valve.Hydrogen was also automatically vented if the pressure inside the balloon reached a critical level.The control system was adjusted so that after three days of the balloon's flight, bombs were automatically dropped (at that time, according to calculations, the balloon should have been over US territory).

The balloon had to carry about 900 kg of equipment, bombs and ballast, to lift such a load a balloon with a diameter of about 10 m was required. At first, balloons were made from ordinary rubberized silk, but then, in order to save money, they began to use washi paper material. , made of mulberry wood, which was quite hermetic and durable. Test runs of paper balloon bombers took place in September 1944 and were satisfactory. The first balloon against the US was released in early November 1944.

Only towards the end of 1944 did the Americans realize that the strange objects flying high in the sky were balloons. Eyewitnesses saw a balloon near Thermopolis, Wyoming, which dropped a fragmentation bomb. P-38 fighter shot down a balloon near Santa Rosa

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(California), another ball was seen in Santa Monica, the remains of washi paper were found on the streets of Los Angeles. The two balloons reached the Modoc National Park, east of Mount Shasta, on the same day. Near Medford, a bomb dropped from a balloon caused a huge fire. The crews of the ships of the Navy found balloons in the ocean. The shells of the balls and the remains of the equipment were also found in the states of Montana, Arizona, in the northwestern United States, Alaska, and even in Canada. Ultimately, one of the American fighters managed to make the balloon fall to the ground almost undamaged, where it was examined and photographed.

On January 1, 1945, an article appeared in Memsueek, "The Mystery of the Balloon", but the next day the censorship committee sent a message to all newspapers and radio stations, which contained a request to refrain from mentioning balloons and the consequences of their raids. This was explained by the need to completely ignore the facts of balloon raids in the media, so that the enemy could not receive confirmation that his unusual weapons had successfully reached their targets. The point was that the Americans, having some idea of the work of the Japanese on biological weapons, were afraid of using such weapons with the help of bomber balls. |

Work on the creation of Japanese biological weapons began in the 30s. when Japan captured Manchu-

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Ryu, and later during the invasion of China. This biological weapon was created in block 731 of the research center in Pingfan (Manchuria), disguised as a water treatment plant. Allied forces suspected that Japan had used elements of biological weapons against China, but were unable to definitively prove their suspicions during the war.

Several epidemics of cholera, typhoid, and bubonic plague were reportedly caused in China by Japanese Uji bombs, which were specially designed to explode several tens of meters above the ground, after which a rain of infected fleas fell on people and animals. . But by some estimates, these attacks sparked disease outbreaks that killed as many as 50,000 Chinese in six years. According to Chinese reports, infected buildings, hospitals and other structures were burned or abandoned by people for decades, and fears of further outbreaks still exist in some cities to this day.

So when America was attacked by Japanese bomber balloons, American officials became concerned that the bombs might be carrying infected fleas, but no such biological bombs were found until the end of the war. No American could have guessed that the balloons were coming directly from Japan, given the vast distances between Japan and the United States. It was believed that the balloons were launched from submarines near the North American coast. There have also been speculations that the balloons were launched from German POW camps in the United States, or even from American centers for Japanese internees. A unit of military geologists was connected to determine the place of launching the balloons. Geologists examined sand from sandbags dropped from balloons and found that the sand could not have originated either from the American coast or from the nearest Pacific islands, it had to come only from Japan. In the future, they even identified specific places in Japan where the

' sand.

Meanwhile, balloons began to appear in various US states (Oregon, Kansas, Iowa, etc.) and in Ce

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loyal to Mexico. Air defense fighters tried to intercept the balloons, but had little success, because the balloons flew very high and surprisingly fast. For the entire duration of the war, fighters shot down about two dozen balloons. Japanese propaganda announced big wildfires in the US and panic among the Americans, as the death toll from the bombing exceeded 10,000 people. The Americans, on the other hand, stated that there were no major fires, because at this time of the year (winter) the forests are wet, and the death toll was only six people. General Kusaba's units launched over 9,000 balloons, with an estimated 1,000 reaching SILA territory. There were also curious cases: two launched balls returned to Japan, but their landing occurred without causing any damage. The Americans reported only 300 balloons. In April 1945, the Japanese stopped the operation, because by that time two of the three Japanese hydrogen plants that supported the operation had been destroyed due to attacks by American B-29 bombers. On March 10, 1945, one of the last paper balloons reached the Hanford area (Washington State), where the industrial enterprise involved in the Manhattan nuclear project was located, and fell onto a power line. This line supplied energy to a building with a nuclear reactor that produced plutonium for the atomic bomb, which the Americans would later drop on Nagasaki, the operation of the reactor was stopped.

Re 200

Va ZAZA on takeoff

Ru 200 attacks

Me 323 Loading "Khanomag" in Me 323

Mistel before takeoff

Preparing "Misteli" for a sortie

ÿÿ 103ÿ

Ta 154

AbM Keysep

Aircraft of the Doolittle group before takeoff

Assembly of the Ra 330 on the deck of the underwater Ra 330 in flight to Toka

—

W. Baumbach

ae e > -

The torpedo goes on a mission

Number 1 (top) and number 2 (bottom)

the crew of the Cheriot

T

The last check of the Cheriot Launching the Cheriot on the water before the mission

those

"Cheriot"

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Mereg equipped with additional optics for aiming

Magdet

CA 2 on the deck of the carrier boat Ra Uipsi

SMPL X on the march

Shuyegiua!

Seefesch@] (prototype)

Underwater carrier SehlitaosKk

MTUMA

Tests of a German hydrofoil boat

The ICC goes on a mission

MZS attacks underwater

Additional optics for aiming

Vogrmaga I

"Goliath"

VI Enje

Allied landings

t g: ~ MU No.

B) aA

Soldier of the gun crew 1.eoroia Artillery spotter

[goro in action

theory

Horns

Metet, six-barrel rocket launcher

German cipher machine "Enigma"

6. DEVICES FOR AIR-DROPING OF SAIVERERS AND SPECIAL AGENTS

Kotasÿite

In 1940, in England, an attempt was made to use an autogyro as a means to ensure accurate landing of special military units. The work was carried out by a group of specialists led by R. Hafner in accordance with the technical requirements of the command of the airborne troops.

Koÿasÿie MKI

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The concept of using a non-motorized device, called the "Rotachute", provided for the location of several such devices one after another on the back of a modified troop-carrying aircraft. The vehicles delivered to a given area rolled back from the tail of the aircraft in turn and continued their independent flight, while the main rotor of the vehicle played the role of a controlled parachute. The apparatus was controlled using a single handle attached to the main rotor hub.

The Rotachute weighed 22.7 kg and could carry a payload of 109 kg, including a paratrooper with a parachute, machine gun and 300 rounds of ammunition. The rotor diameter was 4.57 m, it was the smallest aircraft of that time. Testing of the apparatus began at the beginning of 1942, during the tests the following parameters were reached: landing height of 1189 m, gliding speed of 150 km/h, and gliding duration of up to 40 minutes.

Wiesepbotche

The KS 200 squadron already mentioned above was intended for conducting special operations, in which, along with German aircraft, in particular, captured allied aircraft were used to drop agents and saboteurs into the frontline zone and deep rear of the enemy. |

The first group of the squadron (1/KS 200) was responsible for the transfer of Abwehr agents across the front line. The largest number of agents (260 men) was dropped in July 1944, mainly by parachute. The total number of agents abandoned from June 1944 to March 1945 was 600 people (of which about 10 were women). During the same period, the number of operations in which sabotage groups were involved was 114. These groups, with the help of captured American B-17 bombers, were thrown into the Soviet Union, Poland, Greece, Italy, France, Belgium, Holland, Ireland, the Middle East and Africa.

Especially for the Ka-200, transport capsules were developed in which sabotage groups were thrown into a given area. These capsules had the designation PAC (Pethopep-Abush-Steayo), in the squadron they were informally called Kieseprotbe ("Giant Bomb"). A capsule for three people, for example, was a cylinder about a meter in diameter, the shell of which was made of plywood. Inside the capsule had two shelves, on which the saboteurs were located. One shelf was designed for two people, the other for one. The upper part of the body and the ankles of each saboteur were secured with fixing straps. Under the head fairing of the capsule was a parachute system

ÿÿÿ-Karre Ashtÿapvebze Ke Yeshe (SÿÿÿÿÿEI)

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Capsule for transporting saboteurs

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ma, on the opposite side there was a compartment with ammunition and weapons, as well as a rubber shock absorber.

An equipped RAS capsule was hung under the fuselage or wing of the aircraft on standard bomb racks before takeoff. Landing was carried out in the following way. After dropping the capsule from the holder, a steel cable was pulled out, one end of which was fixed on the head fairing of the capsule, and the other on the holder. Having stretched out to a predetermined length, the cable pulled off the head fairing from the capsule, after which the parachute system of the capsule was opened. The capsule landed vertically, with the impact energy dampened by a rubber shock absorber. After landing, the saboteurs opened the capsule from the inside, freed themselves from the fixing straps and climbed out of it. On the B-17 aircraft, various variants of transport capsules were used, including the RAZSIININU for four or five people.

Neio#y

Austrian Paul Baumgartl worked on the creation of a miniature backpack helicopter. His first device, called NePoyu I, appeared in 1941, but the test results were disappointing.

The next development was the NeNoYau 111/57 apparatus, equipped with two counter-rotating propellers,

powered by an Arg5 Az 8 engine. Each propeller had only one blade, so a counterweight was installed at the short end of the blade for balancing. During the tests, it turned out that the engine power is not enough to carry out the flight. Therefore, Baumgartl created the next apparatus called Netzoyu 111/59 with a 16 hp engine. With. This device required great physical strength from the pilot, since the empty weight of the device was 35 kg. The total takeoff weight of the device was 120 kg, during the tests several flights were performed, but at the end of the war all work in this direction was stopped, and all design forces were sent to carry out the “urgent fighter program” of the Luftwaffe.

7. PLANES FOR SUBMARINES

The idea to use seaplanes from submarines first came up with the Germans during the First World War. In 1915, the EE 29 aircraft, installed across the deck in the bow of the submarine 0-12, was delivered to the coast of England. The plane was launched 30 miles from the coast, after which it made a reconnaissance flight over Kent and returned safely to its submarine. Soon the Germans began to use aircraft to attack enemy targets on the coasts of England and France, while the aircraft were equipped with a bomb load of up to 12 kg. One of the raids took place on the outskirts of London. Three British planes went up to intercept, but the German plane managed to get away from them.

The British at that time had the problem of fighting German airships of the Zeppelin type, which in 1915-1918. made regular raids on the British Isles. In the English Channel, British ships with interceptor aircraft on board were constantly patrolling. In 1916, the E-22 boat was adapted for these purposes, in which two Sopwith aircrafts were installed behind the wheelhouse along the deck. The main task of the E-22 was to deliver aircraft as close as possible to the bases of the German Zeppelins. However, the boat with the planes fixed on the deck was an easy prey for the enemy. Some time later, E-22 was sunk by the German boat 0-18.

In the 20s. The British, taking into account the sad experience of the combat use of the E-22, developed the M-2 boat with a sealed hangar on the deck, in which during the campaign it was placed in a

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in its original form, the Rego biplane aircraft, created by Parpa | In 1932, the M-2 boat sank during a training trip.

Work on the creation of aircraft for submarines intensified in the prewar period. Experimental aircraft were built and tested in the USSR (SPL), USA (X8-1 and M$-1) and Poland (A-2), but none of these aircraft was put into service in their countries. Aircraft developed in France (MB.411) and Italy (M.53 and R.8) were adopted in the pre-war period by separate submarines (the French navy's spigosh and the Italian navy's deiore Negatossa) and took part in fighting in the first half of the war. And only in Germany (Ag 231, Ba 330 and Ju 87) and Japan (EbU1, EE\, E14U1 and M6A1) aircraft for submarines were used until the end of the war.

spl

In 1931, the Soviet aircraft designer I.V. Chetverikov developed a project for an aircraft for submarines, which received the designation SPL. In 1934-1935. NIIGVF built two prototypes of the aircraft. The first copy, built as an amphibious aircraft and designated OSGA-101, passed flight tests both on land and on water. The second copy, completed by the end of 1934 and designated SPL (“Hydro-1”), was undergoing flight tests in Sevastopol until the end of August of the following year. When folded, the aircraft was stored in a container with a length of 7.45 m and a diameter of 2.5 m. In 1936, the SPL took part in the international aviation exhibition in Milan, but this work did not receive further development.

Characteristics OSGA-101: crew - 1 person, power plant - 1 M-11 engine with a capacity of 100 liters. With. (75 kW), wing span - 11.4 m and its area - 17.0 m², aircraft length - 7.6 m, empty weight - 630 kg, maximum takeoff weight - 880 kg, maximum speed - 170 km / h, range - 400 km, service ceiling - 3500 m, flight duration - 3
hours.

Characteristics of the SPL: crew - 1 person, power plant - 1 M-11 engine with a capacity of 100 hp. With. (75 kW), wingspan - 9.6 m and its area - 13.4 m2, aircraft length -

7.4 m, empty weight - 592 kg, maximum takeoff weight - 879 kg, maximum speed - 186 km / h, range - 400 km, climb time 1000 m - 3.9 min, service ceiling - 5400 m, flight duration - 2 hours.

MV.411

French company Magse! Wazzop in the early 30s. started development of a float reconnaissance and spotter for the submarine Zigsosh. The aircraft in the folded state had to be placed in a sealed hangar behind the tower. Initial tests passed sa-. molet MV.35. However, after it crashed in 1935, the MV.410 aircraft began to be tested, which became the prototype for the MV.411 seaplane.

The single-float monoplane MV.411 first took to the air in June 1935, and later the second machine began testing. The Surcouf boat was in service with the French Navy until the start of World War II. After the capitulation of France on June 22, 1940, the boat went to England, where it became part of the French armed forces of the "Free France" under the command of General de Gaulle and took part in the hostilities against the Germans. In February 1942, the Surkuf sank off the coast of Panama after an accidental collision with an American cargo ship.

Characteristics of MB.411: crew - 2 people, power plant - 1 Zaitsop UMOR engine with a capacity of 175 liters. With. (131 kW), wing span - 12.0 m and its area - 22.0 m?, aircraft length - 8.25 m, height - 2.85 m, empty weight - 690 kg, maximum takeoff weight - 1140 kg,

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maximum speed - 185 km/h at an altitude of 1000 m, cruising speed - 130 km/h, range - 650 km, time to climb 1500 m - 8.0 min, service ceiling - 5000 m.

Ag 231

At the beginning of 1940, Arado received a contract for the development of a float reconnaissance aircraft for submarines. The aircraft, which received the designation Ag 231, was equipped with a Hirt HM 501 engine with a power of 123 kW and was a simple collapsible design. The wing had

a kink in the central part, while the left console was located slightly higher than the right one, which made it possible to fold the consoles back one above the other when disassembling the aircraft. Disassembled with the floats removed, the machine fit in a vertical container with a diameter of 2 m, located in the hull of the boat in front of the turret. The descent of the assembled machine into the water and its recovery after the flight on board the submarine was carried out using a folding crane. The entire process of dismantling the aircraft and putting it into a container took about 6 minutes, assembly and preparation of the aircraft for launching took the same time.

The first prototype of the Ag 231 took off at the beginning of 1941. Tests revealed the insufficient stability of the aircraft on water, as well as the impossibility of taking off with a wind speed of more than 20 knots. Nevertheless, all six experimental machines ordered were built, they were intended for operation on XI type boats. The type XI cruiser submarine had a length of 115 m and a surface displacement of 3140 tons, it could develop a surface speed of up to 23 knots, there was one twin 127-mm gun in the bow and stern of the boat. However, after the construction of three type XI boats, further production of these submarines was discontinued. In this regard, all work on the Ag 231 aircraft was also stopped, and KIM issued an order to the Focke-Achgelis company for the construction of a reconnaissance autogyro Ka 330. Two Ag 231 aircraft were used to patrol the area of the German submarine base on the island of Java.

Characteristics Ag 231: crew - 1 person, power plant - 1 engine "Hirt" NM 501 with a capacity of 165 liters. With. (123 kW), wing span - 10.16 m and its area - 14.7 m ', aircraft length - 7.8 m, height - 3.1 m, empty weight - 834 kg, takeoff weight - 1051 kg, maximum speed — 170 km/h, cruising — 130 km/h, service ceiling — 3000 m, flight range — 500 km, maximum duration — 4 hours.

ga 330

In 1942, for submarines type XO2, the Fokke-Ahgelis company developed a single-seat reconnaissance autogyro Pa 330 Vasiege (“Wagtail”) towed on a cable. Kon

its structure was extremely simple: a longitudinal tube reinforced in the front by a truss with a pilot's seat fixed on it, tail and a small instrument panel in front and a vertical tube with a three-blade main rotor and a parachute. The tail unit, made of pipes and sheathed with fabric, consisted of a stabilizer and a keel with a rudder. The propeller blades had a tubular spar, plywood ribs and toe, fabric sheathing. The entire power frame of the apparatus was made of steel.

For takeoff and landing on the deck, steel quick-release skids were provided. In special cases, for example, when operating the apparatus on land, a wheeled chassis could be installed. The control of the apparatus was carried out with the help of a handle and pedals, as well as on an airplane. On the dashboard there were indicators of speed, the number of revolutions of the propeller and an altimeter.

On the submarine, the autogyro was stored disassembled in two vertical cylindrical containers with an internal diameter of 600 mm. The assembly of the apparatus before the flight was carried out on

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launch pad in 7-8 minutes. Before the flight, the pilot manually spun the main rotor with the help of a launch cable. When the required speed was reached, which was the sum of the speed of the submarine and the wind speed, the apparatus took off, unwinding the towing cable from the winch (like a kite). With a towing cable length of 300 m and a flight at a speed of 35 km/h, the autogyro climbed to a height of 100 m, and at a speed of 80 km/h, to 220 m. At the same time, the horizon was visible at a distance of about 35 and 53 km, respectively.

During the flight, a telephone connection was maintained between the apparatus and the boat. There were three communication points distributed between the pilot, the winch operator and the submarine commander. After the end of the observation, the aircraft pulled up to the launch pad. If necessary, the device during the flight could free itself from the cable and make a free landing. In case of malfunctions in flight, it was possible to reset the propeller by pressing the emergency lever located above the pilot's head and unhook the cable. After that, the pilot descended along with the aircraft on a parachute, which ensured a safe descent.

40 m.

In total, until the end of the war, 200 copies of the Ba 330 were built at the Weserflugtsoygbau company near Bremen. Pilots for them were trained at the Skazhais-Mepdop airbase near Paris, training was carried out in a vertical wind tunnel. The first production gyroplane was used on a submarine in the South Atlantic in the middle of 1942, and from February of the following year, Type 1X 02 submarines operating in the Pacific Ocean were equipped with Ga 330 vehicles. However, in combat use, the gyroplane sometimes caused great inconvenience - the boat could not carry out an emergency dive if the gyroplane was in flight. For this reason, the Gha 330 was unpopular with submariners; it was used only where the enemy had little anti-submarine forces. Under such conditions, the use of a gyroplane was more useful and safer.

Characteristics of Ra 330: crew - 1 person, length - 4.47 m, height - 1.67 m, rotor diameter - 7.3 m, empty weight - 75 kg, flight weight - 175 kg, flight speed range (ground speed Submarine + wind) - 35-80 km / h.

Jo 87C

In 1938, KIM decided to create a naval modification of the aircraft based on the Junkers dive bomber Ji 878 for deployment on the Graf Zeppelin (Otayo Herrepp) aircraft carrier. This modification, which received the designation ÿi 87ÿ, was equipped with mounts for taking off the car from a catapult and a landing hook. In addition, the design of the landing gear was modified so that the landing gear could be dropped in the event of a forced landing on the water, and the wings were made folding to save space on the deck.
aircraft carrier.

The first pre-production aircraft ÿi 87S-0 began flight tests in the summer of 1939. Since the aircraft carrier Graf Zeppelin was only 85% ready by the beginning of the war, in September a small batch of pre-production aircraft was sent to the 2nd and 3rd group of attack aircraft squadron 8.0.2, who fought in Poland.

ÿo 87 0-3 for the transportation of saboteurs

In connection with the decision to stop the construction of the aircraft carrier, all work on the J and 87C was stopped, and part of the built aircraft was used for experimental research. In 1943, Erich Gimpel, already mentioned in connection with the Elster operation, developed the Pelican operation, the purpose of which was an air attack on the locks of the Panama

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channel. It was assumed that two submarines of the UPS type, each of which would have a sealed container on board with a folded Lu 87S aircraft, would reach one of the Caribbean islands. After unloading both aircraft on the shore, they will have to be collected, bombed on them and released into flight. After the attack on the Panama Canal, the pilots would have to land the planes on the territory of a neutral state or, jumping out of them on parachutes, be taken prisoner by the Americans. Gimpel carefully worked out all the details of the operation, agreed on the allocation of two submarines and two J87C aircraft, but Berlin canceled the operation.

Characteristics of ÿi 87V-1: crew - 2 people, power plant - 1 engine ÿito-211 Oa with a capacity of 1200 liters. With. (898 kW), wing span - 13.8 m and its area - 31.9 m, aircraft length - 11.1 m, height - 4.0 m, empty weight - 2715 kg, takeoff weight - 4340 kg, maximum speed - 380 km / h at an altitude of 4100 m, cruising speed - 335 km / h at an altitude of 3700 m, practical ceiling - 8000 m, range with a 500-kg bomb - 590 km, armament - two MS 17 machine guns, one MS 15 machine gun, one 500 kg bomb or one 250 kg bomb four 50 kg bombs.

E9-Y1

In 1936, the Japanese company Watanabe developed a two-float biplane aircraft under the designation E9M1. It was intended as a reconnaissance spotter for use from submarines. In the stowed position, the car was located in a hangar on the deck of a submarine. E9ÿÿ scouts took part in combat operations in China (by December 1941, 11 boats with these aircraft operated), as well as in the Pacific War (until the end of the war, 27 boats with E9ÿI operated). The number of E9M1 aircraft built, to which the Allies assigned the code designation ZI, amounted to 35 copies.

Characteristics of E9ÿM1: crew - 2 people, power plant - 1 Hitachi engine with a capacity of 300 hp. With. (224 kW), wingspan - 10.0 m and their area - 22.1 m?, aircraft length - 7.64 m, height - 3.29 m, empty weight - 847 kg, take-off weight - 1210 kg, maximum speed - 233 km / h, cruising speed - 148 km / h, climb time of 3000 m - 9.6 minutes, practical ceiling - 6740 m, armament - one 7.7-mm machine gun.

E14-T1

In 1938, the 1st Naval Aviation Technical Arsenal in Yokosuka received an order from the Japanese Navy to develop a reconnaissance seaplane. The aircraft, designated E14YI, was intended for use from submarines of the [-15. It had to fit in a hangar aboard a submarine with the wing and floats removed, easy to assemble in preparation for a flight, and disassemble after completing the mission.

The first prototype of the E14U1 aircraft, equipped with the Hitachi Tempu-12 engine, took off in 1939. Initially, the machine had a relatively small keel, but according to test results, the keel height was increased. The high keel was made collapsible to allow the aircraft to be stored in the hangar. In the series, the aircraft was produced under the designation "reconnaissance submarine type 0 model 11" (later it was called "small reconnaissance seaplane type 0 model 11").

The E14U1 first took part in combat operations on December 17, 1941, when a plane took off from the submarine 1-7 to evaluate the results of the Japanese attack on Pearl Harbor. Before 1943 E14U! were actively used in reconnaissance missions in Australia, New Zealand, Africa, Madagascar and the Aleutian Islands. The E14U1 aircraft, launched from the 1-25 submarine, was the only Japanese aircraft to attack US territory, dropping incendiary bombs on the Oregon coast. Two E14U1 machines were used on

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German submarines based in Sumatra. A total of 125 E14U1 reconnaissance aircraft were produced during the war years (the code designation of the allies was C1ep).

Characteristics of E14U1: crew - 2 people, power plant - | engine "Tempu" -12 with a capacity of 340 liters. With. (254 kW), wing span - 11.0 m and its area - 19.0 m ;, aircraft length - 8.54 m, height - 3.9 m, empty weight - 1072 kg, maximum takeoff weight - 1450 kg, maximum speed - 246 km/h near the ground, cruising speed - 157 km/h at an altitude of 1000 m, range - 962 km, time to climb 3000 m - 10.15 min, practical ceiling - 5420 m, armament - one 7.7 mm machine gun and 60 kg of bombs.

MbA1T

In May 1942, Aichi began developing a bomber designed to be based on class 1-400 submarines. The aircraft, which received the designation MbA] “Seyran” (“Solar Hurricane”), was equipped with an Atsuta engine (a licensed version of the German engine OB 601). The launch of the bomber was envisaged from a catapult; if necessary, the floats of the aircraft could be dropped in the air to increase the flight speed. On a submarine, the aircraft had to be stored in a hangar with a diameter of 3.5 m, a class 1-400 boat could carry up to three Seiran aircraft at the same time. The original purpose of these submarines was to carry out clandestine raids to the East Coast of the United States in order to use Seiran aircraft to drop bombs with biological weapons (rats or fleas, infected

bubonic plague, cholera, typhus, or other diseases) to New York and other coastal cities.

By the spring of 1943, at the company’s plant in Nagoya, the construction of an experimental batch of four MbAI machines (special type 4 model 11 float bomber) and two training machines M6A1-K “Nanzan” (“South Mountain”) with wheels- chassis. The first aircraft from an experimental batch took off in November 1943, and a year later the first production aircraft left the assembly line. In early December 1944, when 8 serial aircraft had already been built, a strong earthquake damaged equipment and assembly lines at the plant. Nevertheless, the fleet began training flight personnel for the M6A1, which were to be in service with the 631st Kokutai, which was part of the 1st submarine flotilla: The submarines of this flotilla were tasked with preparing for attacks on the Panama Canal. The production of the aircraft was already almost restored, but on March 12, 1945, the plant was destroyed as a result of an American air raid. Until the end of the war, only 20 aircraft out of the planned 44 aircraft were produced, but none of the 1-400 boats could launch attacks on the Panama Canal.

Characteristics of MbA1: crew - 2 people, power plant - 1 Atsuta-21 engine with a capacity of 1400 liters. With. (1044 kW), wing span - 12.28 m and its area - 27.0 mg, aircraft length - 11.64 m, height - 4.58 m, empty weight - 3300 kg, maximum takeoff weight - 4445 kg, maximum - naya speed - 475 km / h at an altitude of 5200 m, range - 1200 km, climb time 3000 m - 5.8 minutes, practical ceiling - 9900 m, armament - one 13-mm machine gun type 2, one 850-kg torpedo , or one 850 kg bomb, or two: 250 kg bombs.

8. PLANERB!

Bomber gliders and fighter gliders

PSN-1/PSN-2

In the early 30s. in the Soviet Union under the leadership of S.F. Valka were developing remote-controlled gliders carrying an explosive charge or torpedo. In 1934, a prototype seaplane designed to attack enemy ships began to be tested. At a distance of 30–35 km, the glider uncoupled from the TB-3 carrier aircraft, aimed

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on the radio to the target and attacked it. The following year, an experimental batch of four PSN-1 gliders (special purpose glider) was produced. According to the results of tests that lasted until August 1936, it was decided to build in 1937-1938. a small series of unmanned gliders, but in March 1938 all work on the PSN-1 was stopped. Since the end of 1938, a float hydroglider PSN-2 of a more advanced design has been developed. However, in 1940 all work on unmanned gliders was stopped.

Characteristics of PSN-1: wingspan - 8.0 m, length - 8.9 m, height - 2.11 m, takeoff weight - 1970 kg, maximum speed - 350 km / h, dive speed - 500 km / h, range - 30-35 km.

Characteristics of PSN-2: wingspan - 7.0 m, length - 7.7 m, height - 2.7 m, takeoff weight - 1800 kg, maximum speed - 600 km/h, service ceiling - 4000 m, range - 40-50 km.

Ag E.377

The project of the glider-projectile Ag E.377 was developed by the Arado company together with the firm Rheinmetall-Borsig in the fall of 1944. The glider Ag E.377 was intended for attacking large ground targets and enemy ships as part of the Mistel scheme coupling Ag E .377 + Ag 234. As a control aircraft, a jet bomber At 2348 or At 234C was provided, mounted on top of the airframe.

Wu 40

E.377 was of an all-wood construction, 2000 kg of the Tnaep 105 blasting charge was placed in the bow. As another option, the installation of a standard 5C 1800 bomb was considered. In addition, there was a container with 500 kg of incendiary liquid in the rear fuselage, which also served as ballast to maintain centering. The wing contained fuel tanks, which were used as additional tanks for the control aircraft. The fuel from the E.377 tanks was squeezed out by compressed air taken from the compressor of the aircraft power plant. The vertical tail assembly consisted of symmetrically located upper and lower keels, the horizontal tail assembly was mounted on the upper keel. The takeoff hitch Ag E.377 + Ag 234 was carried out with the help of a resettable launch cart, similar to the one

the one Rheinmetall-Borsig developed for the Ag 2344. But since the hitch was heavier, the cart was reinforced and had additional wheels, rocket boosters and a braking parachute. Upon reaching the target, E.377 undocked from the control aircraft using pyrobolts, after which it flew towards the target in an autonomous flight. The control of the steering mechanisms of the airframe was carried out using a special device, which was remotely controlled by the pilot of the aircraft. The control plane after completing the task returned to the base.

Characteristics of Ag E.377: wingspan - 14.4 m and its area - 27.0 m?, aircraft length - 10.9 m, fuel weight - 4500 kg, takeoff weight - 10,000 kg, total takeoff weight of the Ag E hitch .377+Ag 234 - 20,000 kg, maximum speed - 650 km/h, range - 2000 km.

Wu 40

At the beginning of 1943, the German company Blom and Voss developed a project for a fighter glider designed to fight Allied bombers. It was assumed that a glider diving from a great height and armed with 30-mm cannons would be able to approach the enemy unnoticed and attack him.

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The glider had a wooden structure, except for a cockpit welded from steel sheets, in which the pilot was lying down. The takeoff was carried out with the help of a towing aircraft on a two-wheeled trolley, and a ventral ski was used for landing. The first flight of the Vu 40U-1 took place at the end of May 1944 with the BE 110 tug.

At the beginning of the summer of 1944, the KIM changed the technical requirements for the Vu 40, which required further development of the design. It was supposed to install a rocket or pulsating engine on the airframe to increase speed during an attack, as well as install hardpoints for four 70-kg bombs under the wing. 19 experimental machines were ordered for testing, in addition, an order was being prepared for an installation series of 200 aircraft. However, in the autumn of the same year, the program was closed, although 9 cars were built.

Characteristics of Vu 40: crew - 1 person, wingspan - 7.9 m and its area - 8.4 m?, glider length - 5.7 m,

height - 1.63 m, empty weight - 840 kg, take-off weight - 950 kg, maximum dive speed - 900 km/h, armament - two MK 108 guns.

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Work on the creation of fighter gliders was also carried out at the German Aviation Research Institute (ORUT). The machine, which received the designation OMI. Yagazereg (glider-fighter), was made mainly of wood, had a straight wing and a spaced tail, under the wing it was possible to hang two 5S-250 bombs weighing 250 kg each. The pilot was seated in an armored cockpit, with a retractable landing ski under the fuselage. Later, the technical requirements were changed, the airframe was equipped with an Az 014 pulsed engine. It was located on top of the rear fuselage in a semi-recessed position, and the air intake visor protruded upwards above the middle part of the fuselage. The project was not implemented.

Characteristics of Lade er: crew - 1 person, wing span - 5.0 m and its area - 3.5 m?, length - 3.0 m, tail span - 1.25 m, flight weight - 640 kg, fuel weight - 160 kg, maximum speed - 900 km / h.

"Shinryu"

The concept of the Shinryu (Divine Dragon) fighter glider was developed by Mitsubishi employee Masakichi Mizuno, the creator of several civil and military gliders. It was assumed that the gliders would be in tunnels and take off with the help of rocket engines, with 100 kg of explosives on board. In the event that the Americans landed on the Japanese islands, they were to be used for ramming attacks on enemy ships and tanks.

In May 1945, the Japanese Navy issued an order to the 1st Naval Arsenal at Yokosuka. for the construction of a prototype, which had the official designation "sea special assault glider". The glider was lifted into the air in tow behind a RÿY bomber, it was equipped with two missile

Takuro-1 engines installed in the tail section, which, after uncoupling from the towing vehicle, were turned on to increase speed when attacking a target. A warhead was located in the forward part of the fuselage, and 8 unguided missiles were suspended under the wing consoles.

In mid-July, a prototype airframe was built and test flights began. It turned out that the glider was unstable in flight, so I had to install a two-tail

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tail plumage. All work on the Shinryu was stopped with the end of the war.

Landing cargo gliders

OR$ 230

The OE$ 230 glider was first demonstrated to the top military leadership in 1937. It was intended to carry 8 people, it was towed behind a ÿu 52/3t aircraft, while the towing aircraft could simultaneously tow up to 6 EE 230 gliders .

With the help of PE $ 230 gliders, German paratroopers carried out one of the most unusual operations of the Second

_ world war. At 5.20 am on May 10, 1940, 11 REZ gliders

230A-1 landed on Fort Eben-Emael in Belgium and landed a sabotage group "Granit" consisting of 84 people, taking the fort's garrison by surprise. Each group of paratroopers attacked their target, while shaped charges weighing from 12.5 to 50 kg were used against artillery towers and shelters, grenades and explosive packages were thrown into the holes pierced by the explosion. After an hour-long battle, most of the fort was captured by paratroopers. As a result of this operation, a day later the entire fort was under the control of approaching German troops. The losses of the Germans amounted to 6 killed and 11 wounded, among the defenders - 23 killed and 59 wounded. |

The largest operation involving UE 230 was the operation to capture the island of Crete a year later, the number of gliders simultaneously involved was 53 copies. However, the loss of gliders during the landing was such that operations of this kind were never undertaken by the Germans again.

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A 40 m long cable was used to tow the REZ 230 under normal conditions, while a rigid hitch was used at night or in bad weather. In 1942, it was proposed to use the glider as part of the Mistel scheme, while the towing aircraft was mounted on the back of the glider. Initially, a Klemm KI 35V light aircraft mounted on the back of the airframe was used as a towing vehicle. "Mistel" took to the air in tow behind the aircraft ÿi 52, after which it was uncoupled. The engine power of the KI 35V aircraft was enough for the combined flight of the coupler. Then, in a series of tests, the Ru 56 and BE 109 were used as an aircraft. The tests were successful, they demonstrated the ability of the combination to take off independently due to the operation of the fighter engine.

The REZ 230A gliders were in service with the airborne squadrons 110 1 and SHO 2, as well as individual glider squadrons. Usually they were used to supply German groups that were surrounded. So, for example, in January 1943, the gliders of the squadron [LS 1] operated from the Kerch Peninsula, supplying the German troops in the Kuban. From January to October the glider squadrons suffered heavy losses, especially during the winter months.

The PE$ 2308-1 version was similar to the OEZ 230A-1 version, but had a braking parachute and defensive armament. These gliders were used in North Africa, but the most famous operation involving the RE 230 was the rescue operation of Mussolini, who was under arrest at the Rifugio Hotel in the remote Gran Sasso mountain range. To release the Italian dictator, Otto Skorzeny's group was delivered on 12 PES 230C-1 gliders (such a designation was given to a glider with three brake rocket engines in the bow). The group of 120 people, in addition to Skorzeny himself, included: Italian General Soletti, 12 pilots, 90 paratroopers and 16 saboteurs from the SS special team. Skorzeny decided to land troops directly on the mountain meadow near the hotel. When taking off from the Pratica de Mare airfield, two overloaded gliders overturned

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-lis, two more gliders were lost during the flight. As a result of the operation, Mussolini was released, after which he was taken out on an Ei 156 plane, accompanied by Skorzenya.

A later version of the REZ 230E-1 airframe could carry 15 people. At first. In 1945, the Luftwaffe had five glider squadrons, but by April 25 their number was reduced to three squadrons. In total, more than 1,500 copies of OE $ 230 were produced during the war years.

Characteristics of REZ 230A-1: crew - 2 people, wingspan - 20.87 m and area - 41.3 m?, length - 11.24 m, height - 2.74 m, empty weight - 860 kg, takeoff weight - 2100 kg, maximum speed when towing - 210 km / h.

pE5 331

The wide-body glider OE$3 331 was developed under the guidance of H. Jacobs, the author of the OE$ 230 glider created in the prewar years and widely used during the war years. The fuselage had a power frame made of steel pipes and fabric covering, the wing was solid wood. The forward part of the fuselage was glazed, the pilot's canopy was moved to the left. The MC 15 machine gun was supposed to be placed in the bow. The glider took off on a two-wheeled cart, landing was carried out with the help of skis. The only prototype of the airframe was built by Gota in 1941, after which all work on REZ 331 was curtailed.

Characteristics: crew - 2 people, wing span - 23.0 m and its area - 58.0 m?, airframe length - 15.8 m, height - 3.55 m, empty weight - 2270 kg, maximum takeoff - weight — 4775 kg, maximum speed when planning — 330 km/h.

bo 242

In 1940, at Gotha, under the leadership of Albert Kalkert, a transport glider of a two-beam scheme was developed under the designation Co 242. fabric upholstery. In the rear fuselage there was a hatch through which the machine was loaded. The crew consisted of two people, 21 paratroopers could be placed in the cargo compartment. The chassis consisted of three landing skis, glider takeoff

So 242

was carried out on a dumped two-wheeled cart. The first two prototypes were tested in the spring of 1941.

Gliders of the A series (cargo So 242A-1 and landing So 242A-2) were armed with four MO 15 machine guns - one in the wing, one in the rear of the fuselage and two in the side windows. The first gliders entered service in August 1941, and in total, by the end of the year, more than 250 gliders entered the Luftwaffe, which made it possible to form six glider squadrons. In the summer of 1942, transport groups K.Ot.2.0.M 5 and K.at.25.U 30 received So 242 for operations as part of the 4th air fleet in the southern sector of the Soviet-German front. A separate squadron "Don" consisted entirely of So 242, He 111 bombers were used as glider tugs.

By the end of 1942, the production of the Co 242A was discontinued, and the Co 242B variant with a non-retractable wheeled landing gear instead of landing skis went into production. Gliders So 242V-1 and So 2428-2 were carried out in the cargo version, and So 2428-3 and So 2428-4 in the parachute version with additional doors in the tail section. In the spring of 1944, So 242 gliders carried out

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supply of the 1st Panzer Army, encircled near Kamenetz-Podolsk, and then were transferred to the Crimea. Some of the gliders were converted to transport the wounded, and some gliders were converted into mobile workshops and operating rooms for use at advanced airfields.

In 1944, another version was launched in series - Co 242C-1, adapted for landing on water. This version of the glider was supposed to be used to attack the British naval base in Scapa Flow by Italian men.

guided torpedoes 51.S. The glider fuselage had the shape of a boat, air bags were installed inside the hull to increase buoyancy, and there were stabilizing floats under the wing. The glider took off behind a tugboat on a two-wheeled cart, it had to carry one 51C torpedo and its crew of two. It was assumed that a group of gliders So 242C-1, landing near Scapa Flow, unload torpedoes with their crews, whose task would be to penetrate the harbor and carry out sabotage attacks on the ships stationed there. However, the planned operation did not take place.

The total production of Co 242 gliders during the war years amounted to more than 1500 copies, of which 133 were converted into Co 244 - a version of a motor glider with two engines.

Characteristics of So 242A-1: crew - 2 people, wingspan - 24.5 m and its area - 62.4 m?, airframe length - 15.8 m, height - 4.25 m, empty weight - 3200 kg, maximum take-off weight - 7300 kg, maximum speed during planning - 290 km / h.

So 345

The project was developed in 1944 in two versions: So 345A for transporting eight paratroopers and cargo So 3458, the airframe crew consisted of two people. The Co 345A had a semi-retractable landing ski, and the takeoff was carried out on a drop wheeled cart. To reduce the length of the landing run, brake rockets were provided in the forward fuselage. For the speed of landing in both sides of the fuselage there were two large doors that opened upwards. It was possible to install two A5014 PUVDs under the wing, which were supposed to provide the possibility of independent flight after uncoupling from the towing vehicle. So 345B did not have side doors; for access to the cargo compartment, the nose of the fuselage, together with the cockpit, opened up. A prototype Co 345B was tested in the summer of 1944 in Rechlin, and Co 345A was made only in a mockup.

Characteristics of So 345A: crew - 2 people, wingspan - 21.0 m and its area - 48.3 mg, airframe length - 13.0 m, height - 4.2 m, empty weight - 2470 kg, takeoff weight - 4100 kg, maximum gliding speed - 370 km / h.

Ka 430

In 1943, the project of an airborne glider was completed under the designation Ka 430 (named after the company's technical director Albert Kalkert). The cargo compartment of the fuselage ended with a ramp through which large objects could be loaded. In the forward part of the fuselage, a battery of brake rockets was provided to ensure the possibility of landing on small areas. According to the test results of the experimental machine, 30 pre-production Ka 430A-0s were ordered at the Mitteldeutsche Metalwerke in Erfurt. The first of the pre-production machines was completed at the end of 1944, but only 12 gliders were built before the end of the war.

Characteristics of the Ka 430A-0: crew - 2 people, wingspan - 19.5 m, its area - 38.7 m:, airframe length - 13.2 m, height - 4.2 m, empty weight - 1810 kg, takeoff weight - 4600 kg,

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maximum towing speed — 300 km/h, maximum glide speed — 320 km/h, armament — one MS 131 machine gun.

Me 321

As part of preparations for the invasion of England, the Messerschmitt firm developed in 1940 the giant Me 321 glider for transporting armored vehicles and paratrooper units. The machine was made entirely of wood, loading of the fuselage was carried out through the nose section that leaned upwards. The takeoff of the glider was to be carried out on a dump cart, landing was carried out on skis. The glider was lifted into the air by an He 1112 aircraft or a trio of BE 110 aircraft. To facilitate takeoff, gliders were often equipped with launch boosters.

The first flight took place in March 1941, the serial gliders Me 321A and Me 3218, which had a wheeled chassis, entered service in June of the same year in specially formed squadrons of heavy gliders that operated on the Soviet-German front - in the Baltic , Belarus and Ukraine. Me 321 carried out the supply of German aviation and ground forces, transporting ammunition, fuel and personnel. So, for example, in October 1941, the 22nd and 2nd (reserve) squadrons of gliders Me 321 from the 2nd air

the fleet was supplied by advanced tank columns rushing to the city of Kalinin, transporting ammunition and fuel.

However, the experience of further operation of gliders has shown that the supply of advanced units requires the use of transport vehicles capable of independently taking off. Therefore, it was proposed to consider the possibility of equipping the Me 321 engines.

The order for the construction of 209 gliders was completed at the beginning of 1942. At the same time, the Me 321 began to be withdrawn from the Soviet-German front in the Mediterranean to prepare for the landing on Malta. In this operation, Me 321, together with tugs He 1112, were supposed to deliver heavy equipment and ground forces to the island, but this operation did not take place. In 1943, some Me 321 gliders were used from airfields in the Crimea to supply German troops in the Kuban. The remaining gliders were transferred to France, where they began to prepare for the transfer of parachute divisions to Sicily, but the operation was soon canceled.

Characteristics of the Me 321V-1: crew - 3 people, wing span - 55.0 m and its area - 300.0 m?, airframe length - 28.2 m, height - 10.2 m, empty weight - 12,400 kg, maximum takeoff weight — 39,500 kg, maximum speed — 160 km/h, glide speed — 140 km/h, armament — two Ma 15 machine guns.

ÿÿ 322

The contract for the construction of 200 landing gliders ÿi 322 Mattiÿ (“Mammoth”) was issued to Junkers in 1941. The glider ÿi 322, made entirely of wood, was intended for the same purposes as the Me 321. During the testing of the first prototype of the airframe, troubles began: when trying to load a light tank into the fuselage, the floor in the cargo compartment was broken. The design of the cargo compartment was strengthened, but at the same time, the carrying capacity of the airframe decreased by 20% compared to the calculated one. However, the troubles didn't end there. During the first flight test, the JI 90 tug managed to lift the glider into the air only at the very end of the runway. Dropped after the takeoff of the glider cart smashed to smithereens on the ground. In addition, the glider that took off from the ground became

pull the tug down. The pilot of the glider dropped the towline in an emergency order, and the glider made an emergency landing in the field. Two weeks later he was towed back

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to the airfield with the same tanks that were supposed to be transported on a glider. The project was canceled, and 98 already mounted airframes were put into firewood.

Characteristics of Ji 322: crew - 3 people, wingspan - 62.0 m, length - 30.25 m, height - 10.0 m, empty weight - 26,000 kg, maximum take-off weight - 36,000 kg.

Ku-7

At the end of 1942, the Japanese company Kokusai (Nippon Koku Koge KK) began developing an experimental transport glider under the designation Ku-7 Manazuru (Crane). It was carried out according to a two-body scheme with two keels and a large central gondola, which could accommodate up to 32 fully equipped soldiers or cargo weighing up to 8 tons. The landing gear was made fixed with four main bearing wheels and one central steering wheel. To simplify the processes of unloading and loading, the back of the gondola was made sliding. The first prototype of the glider, codenamed Wiggata by the Allies, took off in August 1944. The glider was towed by Ki-49 or Ki-67 bombers. However, the glider is not in the series

went.

Characteristics of the Ku-7: crew - 2 people, wingspan - 35.0 m, airframe length - 19.9 m, takeoff weight - 19,000 kg, payload - 32 people or up to 8,000 kg of cargo.

Ku-8

In 1939, the Army Aviation Headquarters ordered from Kokusai a prototype light transport aircraft under the designation Ki-59. According to the results of flight tests conducted in June 1939, it was necessary to remake the nose to improve the pilot's visibility, increase the vertical tail area and change the shape of the chassis wheel fairings. After completion, the aircraft was put into mass production under the designation "transport

military type 1 aircraft, it could simultaneously carry 11 people.

However, the Ki-59 aircraft (code designation of the allies Tÿegev) was not produced for long, in December 1941 it was converted into a glider, for which the engines were removed from it, and the landing gear was replaced with a ventral ski. The glider received the designation Ku-8-1 (experimental military transport glider), the glider was tested with the tug Ki-59. According to the test results, the glider was finalized and in 1944 launched into a series under the designation Ku-8-P (military type 4 transport glider model 2). It was equipped with an opening forward fuselage and could carry a light gun or 20 paratroopers, the glider was usually towed by a Ki-21 aircraft. The Allies gave the glider the code designation Sapaeg or Soose.

Characteristics of the Ku-8-P: crew - 2 people, wingspan - 23.2 m and its area - 50.7 m?, airframe length - 13.31 m, empty weight - 1770 kg, takeoff weight - 3500 kg, poppy - maximum towing speed - 224 km/h, payload - 20 people or up to 1500 kg of cargo.

NatyIsag MK |

English company Sepega! Aisgay 144. developed the design of the Natijsag heavy glider capable of carrying a 7-ton tank. The glider was a wooden structure covered with plywood and linen. To facilitate the process of loading and unloading heavy equipment, the nose of the airframe was made to open. The first flight of the prototype took place on March 27, 1942, after the completion of the tests, 412 copies of the Natycar MK I were ordered. For the first time this type of glider saw action, supporting the landing of the 6th Airborne Division in Normandy in early June 1944, when 70 aircraft were involved.

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The variant of the Napscar MK X airframe was equipped with two Megsigu 31 engines with a power of 965 hp each. With. (719.6 kW). This version was proposed for use in the Allied invasion of Japan. It was planned to build a large number of these aircraft, but by the time the war with Japan ended, only 22 aircraft had been built.

Characteristics of Nashysag MK 1: crew - 2 people, wingspan - 33.5 m and its area - 154.0 m?, airframe length - 20.7 m, height - 6.2 m, empty weight - 8845 kg, maximum takeoff weight 16,783 kg, maximum towing speed 241 km/h, payload 7940 kg:

New INC

By the end of 1940, Sepega! Apsgaÿ Ga. received an order to develop a landing glider. The glider, which received the designation Ho{zig MK I, was made entirely of wood, had drop landing gear and a central ski, on which it was supposed to land in the event of dropping the landing gear, but this was rarely used. Noÿÿrig MK I could transport 7 fully equipped soldiers over a distance of up to 134 km. Despite the fact that 23 copies were built, this type of glider was not accepted for widespread use, instead a variant of the training glider Nogzrig MK P was built. This variant had a modified wing of reduced span, a slightly modified cockpit canopy and an entrance door, except In addition, dual control has been installed. The total number of airframes built for both options was 1012 copies.

The next option was Touch Nogrig, which consisted of two fuselages connected by a new wing center section and tail unit. It was intended to carry 16 paratroopers. Although a prototype twin-fuselage glider was built in 1942, this version did not go into production.

Characteristics of Norig MK P: crew - 1 person, wingspan - 14.0 m and its area - 25.3 mg, airframe length - 12.1 m, height - 3.3 m, empty weight - 753 kg, maximum take-off weight — 1632 kg, maximum towing speed — 145 km/h, payload — 7 people.

Nogsa MKI

In December 1940, the British firm Upzred Sotrapu received a contract to develop an all-wood glider capable of carrying 25 fully equipped soldiers or light field guns. The first two prototypes were assembled in London, the next five were made in Portsmouth. First pro

The prototype, designated Nogza MK 1, took off in tow behind the Whittley bomber on September 12, 1941. Based on the test results, the airframe was accepted for serial construction. In addition to Apzred's factory, the Airframe was produced by the company Aÿiiip Moyug Sotrapu and the furniture company Nagÿs Heriz. The airframe was produced in two versions: Nogsa MK I with a hinged ramp door on the left side and Nogsa MK P with a forward fuselage opening to the side to facilitate loading. The total number of gliders built was 3633.

The first use of Nogz took place when 30 gliders were towed during the day from England to North Africa, of which three gliders were lost, only one of them as a result of an enemy attack. Some time later, the glider received a baptism of fire during the Allied landings in Sicily: out of 137 Nadnap and Nogsa gliders sent on a mission, only 12 cars reached the final landing point, among them 10 Nogza gliders. A year later, up to 600 Nogza gliders were used during the Allied landings in Europe. In these operations, the gliders were carried by 20 people.

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Shortly after the launch of the MK P into mass production, a draft version of the bomber airframe was developed. It was assumed that a glider loaded with bombs, towed by a twin-engine aircraft, would be delivered to the target, where it would drop the load. To do this, a 7.5 m long bomb bay was equipped in the Khorsa cargo compartment, which could hold four 900 kg bombs, two 1800 kg bombs, or one 3600 kg bomb. However, this project was not implemented.

Characteristics of Nogza MK P: crew - 2 people, wingspan - 26.8 m and its area - 106.65 m?, airframe length - 20.4 m, height - 6.4 m, empty weight - 3402 kg, maximum takeoff weight — 6917 kg, maximum towing speed — 161 km/h.

Sat-4A

The American firm Maso Argy Cogr. developed in 1942 the landing and transport glider SS-4A. The glider, which the Americans had the designation Na! and among the British Nad-dap, was created from steel pipes and wood, had sheathing

ku from fabric. The forward fuselage folded down to facilitate the loading and unloading of light vehicles and light guns, although the airframe could also be used to transport 15 fully equipped soldiers, who were placed on a bench along the fuselage in flight. The SS-4A was produced in large quantities at the factories of Veess, Boeipr, Cezzpa and Eogd. Nadpaps were first used by British and American airborne troops in preparation for the Allied landings in Sicily in the summer of 1943. In July of the same year, a glider loaded with medical supplies for the USSR flew from Canada to England in tow Pakota, flying 5633 km in 28 flight hours.

In two years, 12,393 copies of the SS-4 were produced, several thousand vehicles were used in 1944-1945. in combat in Europe. Later, a large number of gliders were transferred to the Pacific region to participate in the planned invasion of Japan. In a limited number (427 copies), an improved version of the SS-15A was built with a modified nose and chassis. He was in service with the United States.

Characteristics of SO-4A: crew - 2 people, wingspan - 25.5 m and its area - 83.61 m?, airframe length - 14.7 m, height - 3.85 m, empty weight - 1719 kg, maximum take-off weight — 4082 kg, maximum towing speed — 201 km/h, landing force — 13 people or 1725 kg of cargo.

Characteristics of SO-15: crew - 2 people, wingspan - 18.95 m and its area - 57.9 m?, airframe length - 14.9 m, empty weight - 1814 kg, maximum take-off weight - 3629 kg, maximum speed towing — 290 km/h, landing — 15-16 people.

HES-1

In 1944, the American firm Corney developed an unmanned glider, the XES-1, designed to refuel long-range bombers in flight. It was assumed that the bomber should be towing a tanker glider with a fuel reserve of 2563 l. After the supply of fuel in the tanks of the glider is used up, the glider must be uncoupled.

The first two prototypes of the airframe were built by Zrapap and were equipped with a cockpit for flight testing. The design of the XES-1 airframe had one feature: its wing was made with a reverse sweep. The wingspan was 16.5 m, the length of the glider was 8.9 m. The glider first took off on October 11, 1944, subsequently one glider was broken during testing, and the second continued to fly until the end of 1945, when the program was closed.

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During the war years, the glider designed by O.K. Antonova. A prototype of this airframe called A-7 was made in the summer of 1941, in October Antonov's group was evacuated from Kaunas to Western Siberia. In Tyumen in the winter of 1942, the A-7 began to be mass-produced. The design of the airframe was almost entirely made of wood, the two-wheel landing gear was removed mechanically in flight from the cockpit. To reduce the length of the run, landing was carried out on the ventral ski. - An A-7 glider was towed behind DB-3, DB-ZF and SB aircraft. It was built in two modifications: an amphibious cargo for transportation of 7 people or cargo weighing up to 1000 kg and a tanker. The fuel tanker glider had gas tanks with a total capacity of 1000 liters in the cargo compartment and equipment for transferring fuel to the towing aircraft.

In total, during the war years, at least 400 A-7 gliders were produced, which, together with the G-11 gliders, were in service with two air glider regiments of the Airborne Forces. In October and November 1943, the crews of 15 SB tugbombers and 35 A-7 and G-11 gliders from the 1st Air Glider Regiment dropped landing groups in the rear of the 16th German Army. In February and April 1944, the regiment worked for partisans + IN-

In the territories of the 1st Baltic Front.

Crews of Il-4 tugboats and gliders from the 2nd Air Glider Regiment delivered flamethrowers and antifreeze for tanks near Stalingrad. And in March 1943, the regiment participated in three separate operations to ensure the combat activities of the partisans and to land a special landing force behind enemy lines. For 60 combat

142 commanders and demolition men, 4 tons of explosives, 12,000 hand grenades, 100 anti-tank rifles, 95 mortars, 1,900 machine guns, 700 rifles, 95,000 cartridges, 3 tons of medicines were delivered to the partisans. From April 19 to May 20, 1943, two dozen glider pilots delivered 19 ammunition and weapons to the partisans. |

Characteristics of the A-7: crew - 1 person, wingspan - 18.0 m and its area - 23.2 m?, airframe length - 10.54 m, height - 1.53 m, empty weight - 955 kg, normal flight weight — 1760 kg, weight of reloading version — 1875 kg, maximum permissible gliding speed — 400 km/h, maximum permissible towing speed — 300 km/h, landing force — 7 people.

G-11 |

A prototype of an airborne cargo glider, created under the direction of V.K. Gribovsky, was built by the beginning of August 1941. Flight tests of the airframe began on September 1, and already on September 18 it was decided to start serial production of the airframe under the designation G-11 (Gr-11, G-29). The glider, made of wood, was designed to carry 11 people or 1200 kg of cargo. He took off from the wheeled chassis, and sat on the ski, which dramatically reduced the mileage during landing. Towing was carried out by DB-3F or SB bombers. Gliders were especially actively used to supply partisans in 1943-1944.

In the course of serial production, changes were repeatedly made to the design of the airframe. Starting from October 1944, gliders with dual controls, landing ski damping and additional structural reinforcements were produced. Production of the G-11 ceased in mid-1945, with only about 500 built.

Characteristics of the G-11: crew - 1 person, wingspan - 18.0 m and its area - 30.0 mg, airframe length - 9.71 m, height - 2.7 m, empty weight - 1250 kg, normal flight weight — 2400 kg, maximum glide speed — 146 km/h, maximum towing speed — 370 km/h, landing force — 11 people,

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KC-20

At the end of June 1941, under the leadership of D.N. Kolesnikov and P.V. Tsybin, the development of the KTs-20 airborne cargo glider began. The first two prototypes were ready in October 1941. After flight testing of the prototypes at a woodworking plant near Kazan, mass production was launched.

The glider was made of wood, had a spaced tail and a three-wheeled landing gear with a tail wheel, doors and windows were located on both sides of the fuselage, the cockpit located in the bow was tilted up during loading and unloading. Initially, it was planned to install a machine-gun turret on the airframe, but later it was abandoned. The landing was carried out on a combined ski and undercarriage wheeled landing gear, however, the KC-20 could, if necessary, take off and land without take-off and landing devices, i.e. directly on the bottom of the fuselage. The serial machine took on board 20 soldiers or 2200 kg of cargo, for the period 1942-1943. 68 copies of the KC-20 were built.

Characteristics of the KC-20: crew - 2 people, wingspan - 23.8 m and its area - 55.2 m?, airframe length - 14.12 m, height - 2.84 m, empty weight - 2050 kg, landing - 20 people.

9. HUMAN TORPEDOES

Secret attacks under water on ships standing in the harbor have been practiced since antiquity. So, for example, in ancient Rome, divers were used to sink ships by inconspicuously drilling holes in their bottoms, as well as for sudden boarding attacks of enemy ships from under the water. In Leonardo da Vinci's treatise The Atlantic Code, there are a number of specific instructions for carrying out underwater sabotage operations, such as blowing up ships from under the water with powder mines, sinking them by drilling holes in the bottoms, setting fire to enemy ships from a special bombard, etc. d.

The need to create effective combat means for underwater saboteurs arose during the First World War. Among the warring countries, the Italians were the first to tackle the problem of penetrating into a heavily guarded enemy harbor in order to sink anchored ships. In the summer of 1918, the Austrian fleet suffered a series of defeats from the Italians, after which the most powerful Austrian ships retreated to the port of Pula, located on the Adriatic coast. The entrance to this harbor was well defended, as a result of which the Italian fleet, having made several attempts to attack the Austrian fleet at Pula, failed to overcome the complex defense system of the harbor.

Lieutenant Rafael Paolucci, who served as a surgeon in the Italian fleet, developed a plan to penetrate the harbor of Pola and destroy the largest ships of the Austrian fleet. Since the protected enemy fleet seemed invulnerable to conventional attacks, Paolucci came up with

smart attack method. He decided that he could secretly swim to the parking lot of the Austrian ships, carrying with him an explosive charge. Having studied the maps of the area, he came to the conclusion that if he had been landed near the entrance to the harbor, he would have been able to reach the given line by swimming, having overcome 3 km. Paolucci began training by swimming for hours in the lagoons of Venice, increasing the distance of his swims. As his stamina increased, Paolucci began to move a 136 kg barrel during the swim, which simulated the weight of an explosive charge needed to destroy an enemy ship. In July, Paolucci was introduced to Major Rafael Rossetti, who designed and built a new type of underwater weapon, the man-guided torpedo. This vehicle was ideally suited to the task for which Paolucci was preparing himself.

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The human-controlled torpedo M1epaya ("Leech") was built in two copies (5.1 and 5.2) in Venice in the spring and summer of 1918, and the body of an unexploded German torpedo was used in the manufacture of the first sample. "Mignatta", which had a length of 7.2 m and a diameter of 0.6 m, weighed about 1500 kg. The torpedo engine ran on compressed air and drove two low-speed propellers of small diameter. Compressed air at a pressure of 205 atmospheres was stored in a tank located in the middle part of the torpedo; this air supply allowed the torpedo to sail at a distance of up to 10 miles at a speed of 2 knots. The torpedo carried two cylindrical mines, each of which contained 175 kg of explosive and a clock mechanism with a maximum delay of up to 6 hours. Two swimmers, dressed in specially designed wetsuits, were located one behind the other in the seats on the central compartment of the apparatus. The torpedo had no rudders, so in order to change the direction of the vehicle, the crew members had to work their arms and legs like oars. The only control mechanism was the valve for regulating the supply of compressed air from the reservoir to the engine. The swimmers could swim seated, one after the other, but in this configuration, during the movement, the rear swimmer found himself up to his neck in the water. For this reason, swimmers preferred to swim on both sides of the torpedo, holding on to special handles installed

Before

toz

on the central part of the body. The mines, which had zero buoyancy, were fastened with the help of magnets built into them to the hull of the attacked ship. The first combat use of the Mignatta took place on the night of October 31 to November 1, 1918, when the torpedo crew consisting of R. Paolucci and R. Rossetti managed to mine and sink the Austrian battleship Viribus Unitis.

This action made a great impression on the command of the Italian fleet, therefore, before the Second World War, it was in Italy that the most persistent work was carried out to create various kinds of means (51ÿ, 558) adapted for carrying out sabotage operations under water. saw a kind of "asymmetric" combat weapons capable of equalizing the capabilities of the Italian fleet with the capabilities of the stronger fleets of England and France. With the use of 5G devices, a number of successful sabotage operations were carried out with the combat swimmers of the 10th MA $ flotilla, the most famous of which were the attacks of British ships in the bay of Gibraltar in September 1941 and in Alexandria in December 1941.

In 1942, the British Navy began to develop its own torpedoes (S'apog MK I, S'apog MK P), and soon the 12th submarine flotilla was formed. Capog torpedoes were almost an exact copy of the Italian torpedoes and differed from them only in minor details.

In February 1943, Vice Admiral Helmut Heie developed the . a plan for the creation of small units of the KKU (Keÿkatr ÿetbapde) within the German Navy (Kriegsmarine) to carry out individual special operations. These units were to include combat swimmers, human-guided torpedoes, midget submarines, exploding motor boats, etc. One of the leaders in this new field of activity was the young lieutenant commander Bartels, a former minesweeper commander MI and the commander of the guard flotilla (MogrozgepÿoShe), created by the Germans in Norway. Under his leadership, a powerful coastal defense system was created within a few months. Even then, he was working on the idea of using ultra-small submersibles for these purposes. In 1942, Bartels submitted a memorandum to the command on this issue, which stated that Germany

a large number of such small craft are needed to protect thousands of miles of Reich coastline. By the beginning of 1943, Bartels had received the rank of corvette captain, and he was entrusted with the creation of the KKU service. Under his leadership, the development of an ultra-small submarine B\er and man-guided torpedoes Magdeg began. and Meweg.

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In 1943, the development of man-guided torpedoes began in Japan (Kaiten-1, Kaiten-2, etc.). Since November 1944, these devices have already been used by the "Special Forces" of the Japanese Navy for suicide attacks.

Human-guided torpedoes, according to the modern classification, belong to underwater propulsion systems (PDS). PDS, the tactics of which have always been based on the principle of evading direct combat contact with the enemy, ensuring the secrecy of the approach and the surprise use of weapons, developed after the end of the war. Apparatuses of this type were developed and built in various countries: Yugoslavia (E-1, B-2), France ("Marlin"), Italy (SE 2E / X30, CE 2E / X60, CE 2E / X100), USSR (“Siren -UME", "SMP.07", "Marina"), the USA (Ece! Engeg), etc.

51C/5$B

The Italians again turned to the concept of a human-controlled torpedo before the start of World War II. Two junior lieutenants Teseo Tesei and Alice Toschi, who served at the naval base in La Spezia, in October 1935 began the development of a new underwater vehicle 1C (5 il I epia Corsa - low-speed torpedo), which later received the nickname May (" Pig"). Italian combat swimmers nicknamed this two-man torpedo because of its poor handling characteristics.

533 mm electric torpedo was taken as the basis for the development of Mayale. Structurally, the device consisted of five sections: a warhead, a front section with a command control panel, a central section with batteries, a rear section with an electric motor and a tail section with propellers, a rudder and a rudder.

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The first version of Mapaje

depths. The warhead, fastening the torpedo to the body of the torpedo with quick-release locks, contained 230 kg of high explosive with a detonator and a clockwork. On the warhead in the region of its center of gravity there was a fastening unit (eye-bolt), with the help of which the warhead was fixed under the bottom of the target. There was a variant of two separate warheads weighing 125 kg each, equipped with their own fuse and clockwork. The device could also carry additional charges, with the help of which it was possible to set fire to oil spilled on the surface of the water.

The rounded end of the front section of the hull was made in order to facilitate the control of the torpedo after separation of the warhead, it housed the front ballast tank and the control panel. In the central section between the front and rear watertight bulkheads, there was a battery of batteries. The battery consisted of 30 cells with a voltage of 60 V, which made it possible to develop a maximum underwater speed of 3 knots and have a theoretical autonomy of about 15 miles at a speed of 2.3 knots. In the rear section there was a 1.1 liter electric motor. With. (later increased to 1.6 hp), rear. 46 l ballast tank and corresponding electric pump. The electric motor shaft passed through the ballast tank inside the sealed cylinder, then through

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Amra with containers for Majaje

the coupling was connected to the propeller shaft. Initially, two contra-rotating coaxial propellers were installed, but then they leaned in favor of a single propeller of a larger diameter, more adapted to low torpedo speeds and less noisy. Armature was installed in the tail section, which included a conical-shaped cage to protect the propeller from entanglement in nets or cable barriers, and rudders and depth rudders.

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The latter were connected to the corresponding controls on the console using steel wires.

Two crew members were located on the apparatus in tandem in their seats. On the first samples of the device, the swimmers kept their legs along the sides of the torpedo, but then special footboards were provided. The device had a minimum of instrumental equipment: a depth gauge with a scale of up to 30 m, a clock, a voltmeter to control battery voltage, two ammeters (one for batteries and the other to control the operation of transfer pumps). The scales of all instruments were covered with phosphorescent paint Kayotig. The speed was controlled by turning the round handle of the rheostat drive to one of the positions, from 1 to 4, which determined the speed of the torpedo. In the latest modifications of the apparatus, the speeds were from 1 to 5. By turning the knob counterclockwise, the direction of rotation of the screw was switched to move backward. An air valve switch was installed next to the engine speed control device.

Between the seats there was a “quick dive” tank and cylinders of air compressed up to 200 atmospheres, which were controlled by a second operator. Compressed air was supplied to the tank using a special valve. By filling this tank with water or blowing it out with compressed air, the rear operator could control the raising or lowering of the apparatus. For loading and unloading torpedoes in the central section of the hull and

two large eyebolts were attached near the operator's seats.

The problem that became apparent in the early stages of development was to ensure and adjust the buoyancy of the vehicle. It was solved by using balancing tanks in the forward and aft sections of the torpedo hull, filling or emptying the tanks was carried out by means of two valves installed on both sides of the pilot's control stick. The tanks were filled with water or emptied using electrically driven pumps.

While driving, the front operator used an airplane-like control stick, moving it forward or backward to gain or decrease depth, or turning it left or right to steer. The driver in front was protected from the oncoming flow of water by a streamlined visor. Behind the rear swimmer there was a box for storing a spare breathing apparatus and accessories, including net lifters, net cutters, clamps, cable ends, etc. d.

The 51C crew was equipped with self-contained closed-cycle breathing devices (Pirelli apparatus) with a carbon dioxide absorber; pure oxygen was used for breathing. The Pirelli apparatus was arranged as follows. Two or three steel canisters contained oxygen at a pressure of 150-200 atmospheres. Through the reducer, which reduced the pressure to a predetermined value, oxygen was supplied through the inhalation tube to the breathing bag, and from there to the swimmer's lungs. The exhalation tube was connected to the regeneration chamber, where the carbon dioxide released by the swimmer was absorbed. Further, the purified gas was enriched in the breathing bag with a portion of fresh oxygen and again fed into the inhalation tube. For all its simplicity, the Pirelli apparatus had one serious drawback - the restriction of the diving depth to no more than 20 m. Otherwise, after 15-30 minutes, oxygen poisoning of the body occurs, convulsions occur and the swimmer loses consciousness. During the war, this happened repeatedly to Italian submarine saboteurs who sought to operate at extreme depths. Moreover, in the case of hypothermia or overfatigue, oxygen poisoning can also be comparatively

but shallow depth. Therefore, it was recommended to use oxygen apparatus for swimming under water no deeper than 10-15 m. However, accidents, poor performance of the torpedo and the need to get away from the enemy unnoticed often forced swimmers to exceed this depth limit.

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Characteristics 51.C: length - 7.3 m (without warhead - 6.7 m), diameter - 0.533 m, weight with warhead - 1587 kg, speed - 3 knots, maximum immersion depth - 25 m, autonomy - 6 hours.

The 5G.C project was presented by the developers to Admiral Cavagnari, after which the Navy created a secret unit of combat swimmers, based in the possessions of the Duke of Salviatis near Viareggio. The woodland stretching along the Gulf of Genoa was the perfect place to hide this top-secret training ground from prying eyes. The members of this new group were called "Serchio's people" after the name of the river on which they trained. In 1938, the group became known as the 1st MAZ flotilla (that is, torpedo boats), Teseo Tesei and Carlo Teppati were responsible for the training and technical training of the personnel. The submarine HI was placed at the disposal of the flotilla. In 1940, the flotilla commander Mokkagatta reorganized it into the 10th MA5 flotilla. As part of the flotilla, a school of combat swimmers was created, which operated at the Marine Academy Spa Georo!do in Livorno. In this school, from September 1, 1940, swimmers began to learn how to use the first breathing devices on pure oxygen.

During the formation of the flotilla in La Sletsia, breathing equipment was tested, new methods of conducting sabotage operations in enemy ports were practiced. The flotilla consisted of two groups: the Gamma group, which included combat swimmers armed with magnetic mines weighing 4.5 kg to complete the task, the second group consisted of saboteurs using special means of delivering heavy charges. In total, the flotilla had 11 man-guided torpedoes. The old HI submarine, which was not suitable for combat missions, was replaced by Adia-series 600-class submarines [14e, Sopdag and Zete. This type of boat was intended for short trips, the boats were

stable and maneuverable, but their surface speed left much to be desired.

In 1935-1936. 2 prototypes of the ZES (No. 1 and 2) were manufactured, then in April 1936 - 4 torpedoes of the first series (No. eleven). The next 8 torpedoes with improved characteristics, ordered in the summer of 1940, had a three-digit numbering, i.e. copies No. 12-19 were numbered as 120, 130, 140, etc. up to 190, i.e. with the addition of zero after the first two digits. Since 1941, $1.C had the following numbering: the 20th copy had the number 220, the 21st - 221, etc. e. | |

51.S were intended for secret attacks on British naval bases in Gibraltar, on the island of Malta and in Alexandria (Egypt). In August 1940, the Sopaag and 5ce submarines were modified for the installation of cylindrical containers to protect $1.C submersibles during transportation from prolonged exposure to water and wave shocks, as well as when carrier boats were immersed to a depth exceeding

`shaving limiting depths of immersion of devices. Three containers were installed on the boat, one in front and two in the stern, each of them housed one 5G.S. Zete and Sopaag were almost identical, but the forward container of the Sopaag boat did not have a reinforced ring. V. Borghese took command of the Zete boat.

The first attempt to use man-guided torpedoes was made in August 1940: a submarine with three vehicles on board went on a campaign against Alexandria. On August 22, the boat was discovered and sank by planes from the English aircraft carrier Earje, so the Italians planned a second operation against Alexandria. The Sopdag boat made a raid on Alexandria on September 30, but did not find targets worthy of attention and turned back. On the way back, she was discovered by an English destroyer, who first delivered a torpedo strike and then bombarded her with depth charges, after which the boat sank. The surviving crew members of the boat were taken prisoner by the British. Among the prisoners

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Lieutenant Elias Toschi, one of the inventors of the guided torpedo, also turned out to be, but the British did not learn anything about the 51 C program.

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The first attack on British ships in Gibraltar was made by the Italians on September 24, 1940. On that day, the submarine Zete under the command of Borghese left the base in La Spezia. The plan was to enter the Gulf of Algeciras and unload torpedoes there with their subsequent attack on the port. Five days later, the boat reached the Gibraltar area, but it turned out that the English ships had left.

On October 30, 1940, Scite with three EE.S on board AGAIN was supposed to attack the British base in Gibraltar, where at that time the battleship Vagkat was stationed. However, two of the three 51.C torpedoes launched from the submarine failed after launch: the first torpedo was deformed by water pressure, and the water pump failed in the second. The crews sank their torpedoes and made it to the coast of Spain. The crew of the third, led by Lieutenant Birindelli, managed to reach the battleship Wata, but when only about 30 m remained to the ship, the battery failed. The crew with great difficulty dragged the torpedo to the target by hand, but the oxygen supply ran out. Then, turning on the timer on the torpedo warhead, they sailed to the pier and boarded the neutral Spanish coaster. However, after the explosion in the harbor, the Spaniards, who suspected something was wrong, handed them over to the British authorities. Despite the fact that Birindelli and his partner denied everything, the British authorities put them in prison. Some time later, Birinndelli managed to write a letter from prison to his mother, in which he strongly advised his brother to continue his studies at the university. His surprised mother gave the letter to the representatives of the Italian Navy, since Birindelli did not have any brother. In fact, it was an encrypted message that the Birindelli crew fought to the end to complete the task.

On May 15, 1941, Scige entered the area of Cadiz (a Spanish port northwest of Gibraltar). On the Italian tanker Fulgor, which was interned by the British, which was stationed in Cadiz, a secret transshipment base was organized for Italian combat swimmers, who, according to false documents, were listed as members of the tanker's crew. However, the attack failed due to the failure of torpedoes and oxygen devices. The boat picked up the swimmers and took them to Italy. |

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On the night of July 26-27, 1941, 51 C took part in the assault on the British base of Grand Harbor (Malta). They were supposed to enter the harbor undetected and destroy the nets hanging from the bridge at the pier and blocking the entrance to the harbor. After opening the entrance to the attack, exploding MTM boats were supposed to go in order to collide with any ship that got in their way. The assault for the Italians ended unsuccessfully: fifteen people died (among them the commander of the 10th flotilla Mokkagatta and Major T. Tezei, one of the authors of 510), eighteen people were taken prisoner, and only eleven saboteurs managed to escape. This operation will be discussed in more detail below.

Nevertheless, this unsuccessful operation did not lead to the abandonment of the $TS program, and on the night of September 20-21, 1941, torpedoes reappeared in the roadstead of Gibraltar. At that time, a battleship, an aircraft carrier, two cruisers, four destroyers, seven tankers and seventeen transport ships were at anchorage. Motor boats patrolled around, from which depth charges were systematically dropped. A torpedo with the crew of Visintini-Magro managed to mine the Repbudae tanker with a displacement of 16,000 tons. The explosion thundered at 8.40, after which the tanker sank. In addition to it, a 1,000-ton bulk carrier Oitat and a 3,000-ton tanker Euop-ascep were damaged.

The most effective 51C attack was also carried out using the Scire submarine. On the night of December 18-19, 1941, the boat reached the port of Alexandria and launched three devices. According to the plan, the apparatus under the control of Luigi de la Penne was to mine the battleship Ua an, the apparatus of Antonio Marchigli was to mine the battleship

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Vincenzo Martello was on his way to a recently discovered aircraft carrier in port. The saboteurs were lucky - at that time two anti-submarine ships entered the port. The Italians quickly slipped behind them through the gate in the barrier. Near the battleship MaShap! the crew of L. de la Penne stumbled upon a rabid network. During the overcoming of this obstacle, a cable was wound around the propeller of the apparatus. Mechanic Bianchi, began to fix the accident, but then disappeared at sea. The immobilized torpedo was not far from the battleship; so de la Penne decided to unhook the warhead and drag it by hand to the ship. On

he spent 40 minutes on this operation, attached the charge to the bottom of the vessel and turned on the fuse timer at 6 o'clock in the morning. Then the completely exhausted Italian went in search of the missing Bianchi and found him at the buoy in an unconscious state. At that moment, the saboteurs were discovered by the ship's guards. When they were taken prisoner, the Italians remained silent during interrogation in accordance with the rules of conduct prescribed to them in such a situation.

The interrogation did not give anything, but the British, suspecting the danger that threatened them, closed the Italians in the hold. De la Penne, knowing that there was little time left before the explosion and that the British could no longer do anything, sent a message to Captain · Morgan: "Your ship will be blown up in five minutes." The Italians had already been brought on deck when the battleship Wanxon shuddered from a strong explosion and slowly sat down on the bottom of the shallow fairway of the harbor. Soon there was an explosion on the battleship Opeep ENhaÿeÿ, mined by the crew of Marchiglia. Some time later, a large tanker exploded, which mined the crew of Martello, not finding the aircraft carrier. The second and third crews of Italian saboteurs were captured by the British on their berets.

Since the captured Italians kept the secret of the existence of 51.C, the British increased their vigilance and created units of combat swimmers to neutralize the mines attached to the bottoms of the ships. The Commander-in-Chief of the English Mediterranean Fleet, Admiral Cunningham, spoke of the Italian swimmers as follows: “... one cannot help but admire the cold-blooded courage
these Italians.

Oceep Epkhazhe was damaged a second time in May 1942 while in a floating dock at Alexandria, but all three torpedo crews were forced to abandon their tubes and all of them were captured. A total of 14 Allied ships were sunk or damaged in seven Italian attacks.

The Italians turned out to be very resourceful in organizing underwater sabotage. They used an original method known as the Gibraltar Floating Trojan Horse. Gibraltar greatly tempted the Italians with the constant presence of English warships and merchantmen. In the spring of 1942, a secret base for Italian saboteurs was set up in one of the Spanish villas. This villa

located 2 miles from Gibraltar, belonged to an Italian officer who married a Spanish woman. Divers were based in this villa, whose task was to sneak into the harbor and attack the unsuspecting British warships. But the direct implementation of military actions from the villa itself turned out to be an extremely difficult matter. Because of these difficulties, the Italians decided to use the Italian tanker Ojotga with a displacement of 4995 tons, which, after the entry of Italy into the war, was sunk in a shallow place on the bottom so that it would not

went to the British.

Under the guise of repairing the ship, a group of Italian engineers and technicians arrived on forged documents, who secretly set up a workshop on the ship for the repair and maintenance of human-guided torpedoes. A hole measuring 1.2 by 1.2 m was cut into the side of the bow of the tanker 2 m below the waterline to allow torpedoes with crews to exit and return undetected. Torpedoes disguised as boiler pipes were delivered from Italy on merchant ships. In the autumn of 1942, several torpedo pilots were sent here and

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underwater mechanics to prepare equipment. After the technical work was completed, they organized monitoring of the roadstead and the port of Gibraltar, the movement of ships, the organization of security, patrols, and the schedule of the barriers.

The first attack by 51.C from OKegg, which took place from December 7 to 8, 1942, ended unsuccessfully. Three vehicles were spotted while approaching the targets, one was damaged by depth charges, the second came under machine gun fire and returned to Ogta, and the crew of the third was killed by a detonating charge. Until May 1943, the Ojotga base was replenished with spare parts smuggled in through Spain and crews. Three 1Cs went out on a mission on 8 May 1943, evading British patrols, setting their charges on three merchant ships in Gibraltar, sinking one of the ships and badly damaging two others. All three G.S. returned to OKegg, but since it took a long time to replenish $1. With crews through Spain, in August, before the Italian surrender, they were able to carry out only one more attack. This latest attack sank two bulk carriers and a 10,000-ton tanker. Total using "floating trojan horse Guy:

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174

braltara, Italian divers sank or damaged allied ships with a total displacement of 42,000 tons. The British could not figure out where the underwater saboteurs came from and where they disappeared. |

In 1943, the Italians began testing an improved version of the torpedo, which was called 558 It had a greater length than 5GS, its diameter was also increased in order to accommodate swimmers inside the torpedo body, only the heads and shoulders of the swimmers had to protrude outward. The speed and power reserve of the torpedo increased due to the installation of an additional group of batteries in the bow compartment. In the middle part of the hull, two cylindrical charges were fixed on brackets on both sides. By the end of the war, 14 torpedoes were partly completed at the Taliedo and Rovereto factories.

Boots MK 1 | / Boots MK 1

After the Italian attack on the naval base in Malta on July 25-26, 1941, one torpedo 57 C fell into the hands of the British. The British, having studied its design, reported it to the top leadership. Prime Minister W. Churchill, seeing the potential of the new underwater weapons, ordered the immediate creation of combat swimmer units in the British Navy. As part of the Admiralty, a department was created to study the problems associated with the development of the English human-controlled torpedo, led by young officers Fell and Sladen. In 1942, the development of a prototype torpedo, designated MK 1, began, and the 12th submarine flotilla was formed.

The British quickly developed their own human-guided torpedoes, which were called Skapo! ("Chariot"). Structurally, ÿÿÿÿÿÿ torpedoes, produced by Sÿÿÿÿÿÿÿ & ÿÿÿ, were similar to the Italian 5ÿ.ÿ and differed from them only in minor details. Just like on the Italian torpedoes, the driver protected himself from the oncoming flow of water with a curved visor, on the inside of which were placed

magnet-

,ny compass, pressure gauges, voltmeter and depth gauge. The control of the stern horizontal and vertical rudders was carried out by one steering wheel connected to the rudders of the four

175;

Scapo! MK.1

Compartment for _ Yy Quick Dip Tank

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Pump regulator Rear trim tank D

Front trim cap

Rudder Rudder Depth

H

ÿE Engine ACOS | Control system

power supply Cylinders with compressed

Shaft propeller by air

Syapo! (location of units)

tyrami ropes. The torpedo had a gearbox that provided four speeds, three of them forward and one back. Between the seats for the crew members there was a quick dive tank. A rather bulky fairing was installed in the stern of the torpedo, in which a spare breathing device was stored, a device for overcoming net obstacles, etc. d.

Diving equipment in England at that time used a standard suit developed by Siege, Sogman & Sotrapukha, useless for autonomous long-term use during operations with Mk 1. Irony of fate, Siebe also offered diving suits with a closed breathing cycle , however, the English Admiralty at one time rejected this project, as having no practical

tic application. Zleje then proposed the project to the Italian Navy, which accepted the proposal, with the result that Plant 5e was built in Italy. Consequently, modified versions of the English diving suits were used by the swimmers of the 10th flotilla in their attacks on the ships of the English fleet. It wasn't until 1944 that the Reamore Wibbeg Company developed the first flexible suit for the British Navy with a closed circuit breathing apparatus running on pure oxygen, eliminating the escape of exhaust air bubbles.

warhead

Stub __ /

!

Explosive

Z Manual ©. zero buoyancy

„(Sen for zero buoyancy and

ER 1 Capsuÿ _] tan

Detonator __ —_ container

7———-—.____ with lead shot —” lead inc sinkers _

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The warhead of the torpedo ÿÿÿÿÿ!

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Characteristics of Sgagio MK G: length - 6.8 m, diameter - 0.84 m, weight with warhead - 1586 kg, speed - 2.5 knots, maximum immersion depth - 27 m, cruising range - 18 miles, autonomy - up to 5 hours.

Characteristics of Boots MK P (designed by S. Terry in November 1942): crew location - back to back, length - 9.3 m, diameter - 0.76 m, weight with warhead - 2359 kg, warhead weight - 680 kg, speed - 4.5 knots, maximum diving depth - 30 m, autonomy - up to 6
hours.

The crews of the torpedoes were recruited from volunteers undergoing special training on the remote northwest coast of Scotland. The training included the basics of diving, methods of identifying ships and coastal landmarks, methods of handling explosives, and much attention was paid to physical training. Then there was training in driving torpedoes, as well as practicing techniques for overcoming net and boom barriers.

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ny. At the final stage of training, training attacks were carried out on the English ship No\e, in the protected zone of which nets, booms and direction-finding stations were installed. Three out of four crews reached the target during the training attack and attached mock explosions to the bottom of the ship

devices. However, during these attacks, one of the swimmers died due to oxygen poisoning.

The first combat use of British human-guided torpedoes was an attack on the German battleship Tirich, anchored in a Norwegian fjord. In October 1942, as part of Operation TSHe (“Title”), the fishing vessel “Artur” was prepared. Two torpedoes and three crews were to be loaded onto it (two for the operation, one for the spare). The crew of the vessel under the command of the Norwegian skipper Leif Larsen, including the saboteurs, were provided with the required documents, including German permits for fishing.

The ship left Shetland on October 26, 1942. At first, the torpedoes were in the hold, hidden under a layer of peat. This precaution turned out to be by no means superfluous - at the entrance to the Trondheim fjord, the ship was stopped by a German patrol boat for inspection. The documents of the crew members were carefully checked, after which the fishing vessel was let through. At the nearest small island, the vehicles were lowered overboard and continued to be towed underwater. After some time, another German patrol vessel approached the side of the "Arthur", but this inspection also ended successfully for the team of the "Arthur". However, when the ship was already within range of their target, both vehicles broke away due to heavy seas and were lost. There was nothing left but to flood the Arthur, and the team to make their way to the Swedish border. All this was done, but during this raid one of the British was wounded, captured and subsequently shot.

In further operations for the transportation of the Chariots, the British used modified T-class submarines - Tgooreg, Tipdegokÿ, TgaueZeg, Ttepskape, Tgasshepe, and also P311. On December 4, 1942, the submarine TgaueCeg was lost during a preliminary reconnaissance of the harbor of Palermo in preparation for Operation Ripsthe. ("Principle").

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The beginning of 1943 was marked by an attack by the British on the naval base in Palermo, however, on January 2, the R 311 submarine, carrying three submersibles and 10 combat swimmers, was blown up by mines and sank. Two submarines Tgooreg and Tsipdetot managed to break through to Palermo, from which 5 Chariots were launched on the night of January 2-3. One crew (Stevens and Carter) fought the strong current for five hours trying to find the harbor entrance. When oxygen supplies were already running out, Stevens decided to leave his partner Carter on the buoy and continue the attack alone. However, not finding the entrance to the harbor, he returned to Carter, after which they

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went to the place of their landing from the carrier submarine. After a long stay in the water, they finally saw in the darkness the signal lights of the submarine Opga ed (P46), which was specially on duty in the area to select the surviving crews. Vigilant observers from the submarine spotted the swimmers and they were rescued. |

On another device (the crew of Simpson-Milne), the battery exploded, while Simpson drowned, while Milne managed to swim to the shore, but was captured. The driver of the third torpedo, Lieutenant Cook, tore his wetsuit on the net and was in fact unable to complete the task. His partner Worthy, having taken control of the apparatus, left Cook and continued the operation alone, but the apparatus was too heavy to be operated by one person, so Worthy had to abandon it at great depths. He swam back to the place where he left Cook, but could not find him. Worthy then managed to make it to shore, but was also taken prisoner.

Of the two remaining submersibles, the torpedo, manned by Greenland-Ferrier, successfully penetrated the net at night and, passing undetected through the harbor, dived under the Italian cruiser py Tranapo. Once there, the crew successfully attached a torpedo charge under the bottom of the ship, after which they tried to make their way back across the sea. In an attempt to overcome the network at full speed, they ran into a merchant ship and damaged their apparatus. Ultimately, the crew abandoned the torpedo and swam ashore, but were soon arrested by the Italian police and handed over to the Italian Navy.
They spent the rest of the WAR in Italian and German concentration camps. |

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The second craft, manned by Dove-Fril, also overcame the net and crossed the harbor unnoticed. There, the swimmers chose the 8,500-ton transport Usipae as their target, penetrated under its stern, and successfully set the charge. After that, they swam ashore, passed through the shipyard, but were arrested in the city. After interrogation, together with their colleagues, Greenland and Ferrier, they were sent to POW camps. After their release from captivity in May 1945, British saboteurs learned that as a result of the operation the cruiser had been sunk and the transport damaged. Other charges set by Greenland and Ferrier either disabled the Italian swimmers or the charges were incorrectly set.

On January 18, 1943, two torpedoes, delivered to the Tripoli area by the submarine Tÿipdetoj, approached the harbor and began Operation Metsote (“Welcome”). The purpose of the operation was to attempt to block the exit from the harbor until the Germans retreated from Tripoli. The first craft successfully entered the port and attacked one of the ships. The second submersible was damaged when launched from a submarine, rendering it unable to dive. For three hours the crew struggled with the vehicle that had lost control and, having exhausted its oxygen reserves, decided to get ashore. With great difficulty, they managed to flood the apparatus near the shore, having previously turned on the warhead fuse timer. Ultimately, the British reached Cairo, falling into the location of the Allied advance detachment that captured Tripoli. Then they were sent to Malta.

In September 1943, Italy surrendered to the Allies, while declaring war on Germany. British and Italian divisions of man-guided torpedoes began to participate in joint operations against the German fleet. In June 1944, as part of Operation OM2, an attack was planned on Italian ships in the harbor of La Spezia, which were under the control of the Germans. Two vehicles with crews (Kauser-Smith and Beray-Lawrence) were delivered to the place of operation on an Italian torpedo boat on the evening of June 22. The first apparatus with the crew of Kauser-Smith, having spent several hours to overcome the barriers, successfully entered the port and attacked the cruiser Bolzano. with a displacement of 10,000 tons, attaching a charge to its bottom. On the way back to

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torpedoes ran out of batteries, so the crew was forced to flood it. Having got ashore, the British managed to connect with the Italian partisans, with whom they, together
participated in the fighting for 6 weeks, but then were captured by a German patrol. The crew of another torpedo failed: on the approach to the port, damage was discovered in

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hull of the apparatus, possibly caused by separation from the carrier submarine. The crew did not dare to break into the protected harbor on a faulty torpedo and, having flooded it, landed on the shore, but was taken prisoner by the Germans. June 23 at 6.30 a strong explosion shook the harbor. The cruiser "Bolzano" tipped to the port side and sank in 15 minutes.

The last British operation using man-guided torpedoes took place on October 27, 1944 in the Pacific theater of operations. Submarine Ttep-ssap! launched two MK P vehicles near Phuket (Malaya) to attack the Italian liners Zitata and Mo1r1. The first crew (Zleridge-Ulcott) successfully mined the Zitata liner. The second crew (Smith-Brown) was not able to attach the charge to the bottom of the Uo]pi, because the ship was in shallow water and the depth under it was not enough for normal maneuvering of the apparatus, in addition, the entire bottom of the liner was covered shellfish layer. Therefore, Brown decided to quietly board the ship and set the charge inside the engine room, a task that took an unplanned 20 minutes to complete. Both crews returned to Tgepshapÿ on their torpedoes and watched as their targets exploded.

Medeg

The Germans used the Italian experience by creating their own human-controlled torpedo called Megeg. The Meweg ("Negro") torpedo was developed under the guidance of naval engineer Richard Mohr from the Torpedo Testing Center TUA (TogredowegzisI zap a) in Zkkernförde. This apparatus consisted of two C7e torpedoes mounted on top of each other. Half of the batteries and the warhead were removed from the upper torned, this allowed the driver's cabin to be installed and sufficient buoyancy to

carry a second torpedo. The cabin of the device was closed from above with a plexiglass cap, through which the driver aimed his device using marks on the windshield (the so-called Kitte-Kohp-Misieg). On the first submersibles, the cap was fixed on the outside, but one day, during training firing, the lower torpedo did not unhook from the submersible and dragged it under water, hitting the target vessel. The driver died at the same time, because he could not open the cap from the inside. Immediately after this incident, the design of the hood was changed so that the driver could reset it himself in an emergency.

The device could not dive, but moved in a semi-submerged state. The cockpit was equipped with extremely simple controls, consisting of a compass, a control stick and two levers for turning on the electric motor and dropping the torpedo. While in the cockpit, the driver used an Ogeseg breathing mask with a carbon dioxide absorber used in the Luftwaffe. For breathing, compressed air was used, which was stored inside a 30-liter cylinder. During the attack, the device was supposed to approach the target at a distance of no more than 300-400 m and launch the lower torpedo. After that, the device turned around and left the battlefield under its own power. Since with this method of attack the driver's chances of survival did not exceed 50%, the personnel of the "Negers" units were recruited by volunteers. Approximately 200 devices were built in 1944.

The first devices were delivered in March 1944 to the armament of the 361st, 362nd and 363rd small fleets (K Neushe) from the Gögkottapdo 350. And already on the night of April 20, 30 Negers took part in the hostilities near Torre Vayanica , north of the Allied foothold during their landing at Anzio. Failures began to haunt the Germans already during the descent of the apparatus into the water. Heavy torpedoes were manually dragged to the water along the sandy shore, while 13 vehicles got stuck and had to be abandoned. Of the 17 launch vehicles, 8 lost their course, and 9 vehicles that reached the given area did not detect a single large target, so the attack did not take place. As a result of this operation, three Negers were lost, one of them was discovered by the Allies the next day. The torpedo floated on the surface, and its pilot was dead due to carbon dioxide poisoning. -:

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The second sortie of the Negers began on the night of July 5-6, 1944, when 26 vehicles headed from Villers-sur-Mer (Normandie) to the port of Caen, on the outer roadstead of which there were English ships under the command of Rear Admiral Raivett- Karnak. Shelling the coast, the ships supported the actions of the British ground forces, which stormed the city of Caen. Shortly after going to sea, two Negers sank, their drivers swimming back to shore. The remaining 24 vehicles managed to reach the anchorage of the British ships. It turned out that large enemy ships, among which were one battleship and four cruisers, were under the cover of many small guard ships, it was impossible to break through to them. Therefore, the Germans attacked those ships that were in the perimeter of the guard. They sank the minesweepers Sayu, Mars and several small transport ships. Only 9 vehicles returned to base. A second attack took place on the night of July 7-8, 21 vehicles were fired. Mereg, but since the night was clear and filled with moonlight, they were all discovered and sunk by aircraft and patrol ships. As a result of this attack, the Germans managed to sink the minesweeper Rujadez and damage the Polish cruiser Ohavop, but not a single unit could return to base.

Characteristics of the Mereg torpedo: crew - 1 person, length - 8 m, diameter - 0.533 m, displacement - 2.7 tons, power plant - 12 hp torpedo electric motor. With. (9 kW), maximum speed - 4.2 knots on the surface and 3.2 knots submerged, range - 48 miles.

Magdeg

Magaet ("Marten") was a more advanced version of the German man-controlled torpedo. Unlike its predecessor, the Megag Magaeg was equipped with a 30-liter ballast tank and a transfer pump, it was able to dive to a depth of 40 m, but had a very limited submerged autonomy.

The first vehicles entered service in July 1944; in total, about 500 Marders were built before the end of the war. First. the attack involving the "Marders" took place on the night of August 2 to 3, 1944 against the Allied fleet. The Germans managed to sink a 7219-ton ship, a mine sweeper

box and 907-ton destroyer Opogp. In addition, they damaged an old cruiser, planned by the Allies to be sunk as a breakwater, and a 7,000-ton transport. Of the 58 vehicles involved in the attack, only 17 vehicles returned to the base, the rest were destroyed as a result of the Allied counterattack.

The last attack in Normandy took place on the night of August 16-17, when 42 Magaegs attacked the 23,189-ton French battleship Sochet! (In fact, the ship was of no value to the Allies, since all the equipment was removed from it). Two Marders torpedoed the battleship, while the rest managed to sink two small ships, the 757-ton EgaKop barrage ship and a 415-ton landing craft. As a result of the attack, 26 out of 42 vehicles were lost, one was captured by the support vessel C 251 after its driver was destroyed by shelling.

There was also a plan to increase the radius of action to adapt submarines of the UPS type as carriers of the Marders. For example, the submarine O 997 was modified to install 4 Marders on its deck. Tests in Norway were carried out during January-April 1944, but the final order for an attack on Murmansk was never issued.

given away

In early September 1944, 30 Marders attacked the allied ships twice, but were unsuccessful, 14 were lost at sea during these attacks, and the rest were destroyed by the allied

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bombers at a German base on 10 September. After that, the use of "Marders" was discontinued.

Characteristics of the torpedo Magayet: crew - 1 person, length - 8 m, diameter - 0.533 m, displacement - 3.0 tons, power plant - 12 hp torpedo electric motor. With. (9 kW), maximum speed - 4.2 knots on the surface and 3.2 knots submerged, range - 48 miles.

On the!

The meager range of the Meweg and Magaeg torpedoes should have been improved with the advent of a new torpedo called Na! (“Shark”), the prototype of which was developed at the TUA enterprise in Eckernförde in 1944. It consisted of two

docked along the axis of the torpedoes and had a double battery capacity. An AES-AU 76 electric motor with a power of 12 hp was used as a power plant. With. It was expected that this upgrade would increase the speed and range. As a weapon, the device could carry one torpedo or one mine.

Contrary to expectations, tests of the prototype revealed a number of shortcomings, among which were: insignificant seaworthiness, which was a consequence of the large length, poor maneuverability of the apparatus, the impossibility for the driver to open the cab cover from the inside in an emergency, etc. After testing the prototype, all further work on the apparatus was terminated. |

Characteristics of the Na! torpedo: crew - 1 person, length - 11.0 m, diameter - 1.1 m, displacement - 3.5 tons, speed - 4.2 knots above water and 3.2 knots under water (briefly up to 20 knots), cruising range — 63 miles at 3 knots.

"Kaiten"

The authors of the project of the first human-controlled torpedo "Kaiten", proposed at the end of 1942, were two young officers of the Japanese Navy S. Nishina and H. Kuroki and designer H. Suzukawa from the naval arsenal in Kure. The Japanese word "Kaiten" literally means "the will of heaven", which expressed the hopes of the Navy for a radical change in the course of the war, in which Japan continued to suffer losses. Structurally, the “Kaiten” was an enlarged high-speed Japanese torpedo type 93 “Long spear”, in which an additional compartment was installed with a periscope, a seat for the driver and control devices (gyrocompass, clock, depth gauge, fuel flow indicator). fuel and a pressure gauge showing oxygen pressure). Directly in front of the driver's face was a periscope monocular with turning handles, on the right was the handle for raising and lowering the periscope. At the top right there was a speed lever that controlled the oxygen supply to the engine. Lowering the other lever turned on the starter and opened the fuel supply valve to the engine. At the top left there was a control lever for the angle of inclination of the horizontal rudders of the torpedo. At the bottom left was the valve valve for the inlet overboard

water into the ballast tank, to the right of the driver was the rudder lever.

In accordance with the project, the design of the torpedo excluded the possibility of rescuing the driver, but this caused an objection from the naval command. Then the authors finalized the design of the torpedo: a hatch was installed in the lower part of the cabin, through which the driver could leave the vehicle, having previously fixed the rudders. In February 1944, a prototype of the modified torpedo was inspected by the command of the Navy, after which the torpedo was put into production, which was organized at the shipyard in Kure.

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By June 1944, several prototype torpedoes had been built and tested near the naval base on Kure Island, which was known under the code name "Base-2". In the process of testing, from the idea of rescuing the driver through the bottom hatch, the fleet command
stuck.

In September 1944, special bases were organized in Hakari, Hirao and Otsujimz, where the training of volunteers from naval aviation began. 10-12 people trained daily on training torpedoes. A torpedo boat delivered a torpedo with a cadet to the middle of the bay and lowered it into the water. The main attention was paid to the ability to maintain a given depth and navigate under water. The driver had to get close to the object to imitate the impact, it was allowed to float under the periscope for only 7-10 seconds. Although no training was carried out on the Kaiten in stormy weather, 15 cadets died during the training, among them was one of the authors of the Kaiten, H. Kuroki. The first release of 12 officers took place on November 7, 1944; the graduates formed the “Kikumizu” detachment, the official name of which was “special purpose strike forces”. In the process of preparation, tactics were developed for the use of torpedoes against ships anchored.

Five models of torpedoes were developed: types 1, 2, Zi 4 with an oxygen-kerosene engine and type 10 with an electric engine. Types 2 and 4 (double) and 10 were made in small numbers and were never used in combat. Type 3: most likely existed as a con-'

concept. Only type 1 was used in combat. In total, about 400 such devices were built, more than 100 devices took part in suicide missions.

Transportation of Kaitens was carried out on the decks of submarines, as well as on the cruiser Kitakami (8 torpedoes) and two destroyers equipped with inclined gangways at the stern. on board was approaching a given area, detecting a target, and then releasing devices for attack.Before the start, the pilot was informed of the course, speed and time of movement of his torpedo so that the device, moving under water, would be at the calculated point for target attack: for example, heading 30°, speed 25 knots for 12 minutes and 30 seconds Once at the calculated point, which was usually chosen no further than 500 m from the target, the pilot raised the torpedo to periscope depth, established visual contact with target and made a swift dash at a speed of 40 knots, aiming at the most vulnerable parts of the enemy ship.

Torpedoes of the first series were launched from carrier boats on the surface, after which the boat went into the depths. Soon the boats began to be converted to launch torpedoes from a submerged position. The drivers got into the torpedoes in advance and waited for the boat to find the target. Air was supplied through a hose, communication was carried out by telephone. Finally, by the end of the war, boats appeared, from which it was possible to go into a torpedo directly from the submarine compartment through the lower hatch of the torpedo.

After the launch, the Kaiten could be under water for six hours, during which time its pilot had to detect the target. The carrier, which did not find the target, could no longer return to the boat, which was in a submerged position and was invisible to the pilot. Therefore, many torpedo pilots, having run out of fuel to the end and left alone with the ocean, probably carried out

'self-exploding a torpedo, not wanting to die slowly and painfully. Kaitens were rather capricious weapons - fast, but difficult to control, prone to diving, etc. d. In addition, they suffered from a variety of mechanical problems, including seawater leakage. cockpit when the carrier submarine was submerged

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normal condition, and a tendency to catch fire from oil leaks. However, the Japanese Navy had no difficulty in recruiting volunteers to use this suicidal weapon.

The Japanese planned the first use of human-guided torpedoes near Ulithi Atoll, where American ships were anchored. For the upcoming operation, twelve people were selected from newly trained potential suicide drivers. Among them was one of the authors of this type of weapon - Lieutenant S. Nishina. He was chosen to demonstrate the possibilities of his invention. The farewell ceremony for the selected pilots took place on the afternoon of November 7, 1944 at the Otsujima base. Vice Admiral Sigzesi Miwa, commander of the 6th Fleet, explained the tasks of the upcoming operation to the torpedo pilots. Three carrier submarines converted for this purpose (1-36, [-37 and 1-47) transport torpedoes to the Uli ti area, where a large number of American ships are concentrated. Torpedo pilots will have to sink the largest ships they can find. The pilots were given traditional swords and ritual hachimaki headbands, and in the evening they had a party for them. The next morning at 09:00 on board the submarine [-36, the leader of the strike group, they left the harbor, escorted by the crews of the remaining ships shouting “banzai!”.

Soon the three submarines parted. 1-37 was to head towards the Palaus to attack the Allied camp in that area. 1-36 and 1-47, meanwhile, were heading straight for Ulithi, where they were to launch their torpedoes into the atoll's giant lagoon. But on November 12 boat 1-37 was in time | another surfacing was discovered by the destroyer M!sro]a$, which captured the boat [-37] in a surprise attack before it could dive and escape in a submerged position.

Boat 1-47, under the command of the ace of the Japanese fleet, Capt. 3. Orita, went to Ulithi quite slowly, developing a speed of no more than 20 knots on the surface, until it reached the zone of action of American patrol aircraft. During the day, the boat went under water, at night it surfaced to charge the batteries and receive radio messages from the headquarters of the 6th Fleet in Kure. November 17 1-47 received a message that one of the Japanese reconnaissance

aircraft noticed the day before the accumulation of American ships in Ulithi. The pilot of the aircraft reported that the ships were anchored in three groups, among them he saw battleships and aircraft carriers. The next day, the boat surfaced 50 miles west of Ulithi to check the condition of the Kaitens, all four devices were in working order. Late in the evening of November 19, the submarine was already within one mile of the southern entrance to the lagoon. At midnight, the four torpedo pilots began to make final preparations. They wrote farewell letters to their relatives and gave them to the captain, after which all four put their hachimaki headbands on their heads.

Two of the pilots (Sato and Watanabe) took their seats in their craft while the boat was on the surface. After that, the boat plunged under the water and headed towards the entrance to the lagoon at the quietest speed. This maneuver took 3 hours, all this time Sato and Watanabe had contact with the boat only by phone. At 3 o'clock in the morning, the remaining two pilots, Nishina and Fukuda, switched to their torpedoes through special hatches. Now all four "Kaiten" were ready to attack. Each torpedo was attached to the deck of the boat with four cables during the trip. Two torpedoes were released when the boat was on the surface, the cables of the other two torpedoes could be released from the boat. At 4 o'clock in the morning, Captain Orita, who was watching the lagoon through the periscope, chose the target - the tanker Mÿsÿÿÿsÿpeua — and declared combat readiness. On the telephone lines, all four pilots reported their readiness.

- Kaiten No. 1 (S. Nishina)! Get ready to start the engine! Orita ordered.

“Ready,” Nishina answered on the phone.

The torpedo mounts were loosened from the boat.

- Start the engine! Orita ordered.

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Inside the submarine, they heard the sound of a running engine. _ body.

- The engine is running.

- Get ready!

- Ready!

— Went!

At 04:15 on November 20, Nishina's torpedo was launched. Behind him, at five-minute intervals, Sato, Wata started

Nabz and Fukuda. The last thing heard in the conning tower of the boat was Fukuda's words: "Long live the emperor!" At 5 am, the submarine surfaced again, because Orita wanted to personally verify the successful completion of the operation, which he was going to report to his command. At 05:07 an orange flash illuminated the lagoon, and 4 minutes later there was another explosion. Orita, fearing destroyer attacks, ordered to go under water again. At 5:52 a.m., the submarine's sonar recorded another explosion in the lagoon. It seemed that at least three of the four torpedoes hit their targets. Orita concluded that all the pilots were dead, and at 0600 he declared a minute of silence, and then sent the submarine home.

The attack by boat 1-36, commanded by Captain Teramoto, was not so successful. Pilots Imanishi and Kudo took up positions in their torpedoes just after midnight. At 3 o'clock in the morning, Lieutenants Yoshimoto and Touozumi climbed into their apparatus from the submarine. All seemed to be going well until 1-36 reached a torpedo launching point near the eastern entrance to the lagoon. At the very moment of launch, it turned out that torpedoes No. 1 and No. 2 could not free themselves from their mounts, although the engines had already been started. In addition, the pilot of torpedo No. 4 reported that his apparatus was flooded with water. The only device that could run in | | 4.54, was "Kaiten" No. 3 with the pilot Imanisi. Yoshimoto and Touozumi returned to the submarine through the airlocks, and the boat surfaced briefly to take Kudo aboard. After that, the boat again went under water, and the captain decided to wait for the end of the attack. After the sonar recorded two explosions, the submarine began to shake the explosions of depth charges. Under these conditions, Captain Teramoto decided to withdraw from the attack area. For 19 hours, 1-36 was forced to remain submerged while the destroyers overhead combed the area for a submarine that the Americans thought had bombarded the harbor with conventional torpedoes. Around midnight, the boat surfaced to replenish air supplies and refuel batteries. There were no American ships nearby, so Teramoto took the boat north at top speed on the surface.

Boats 1-36 and 1-47 returned to Kure on 30 November. December 2 aboard the Tsukushi Maru, the flagship of the 6th Fleet,

there was a meeting at which the reports of captains Orita and Teramoto about the results of the use of human-controlled torpedoes were heard. More than 200 staff officers and specialists took part in the discussion, after which the staff officer of the 6th Fleet summed up: “The crew of boat 1-47 saw two flashes from the explosion, and the crew of [-36 heard explosions. Three days later a reconnaissance aircraft took photographs of Uliti harbor. Based on this, it can be concluded that Lieutenant Nishina sank the aircraft carrier, as did Fukuda and Imanishi. Sato and Watanabe each sank a battleship." This was exactly the conclusion that those present wanted to hear, loud cries of “banzai!” were heard. Based on this information, Tokyo decided to expand the Japanese human-guided torpedo program, and the news of the outstanding success of suicide pilots caused enthusiasm among young people who were trained in the skill of control.

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"Kaitens". However, the Japanese assessment of the consequences of the attack was greatly exaggerated: the only ship sunk during the operation was the M5 Tema tanker.

In January 1945, to carry out operations using the Kaitens, a detachment called the Kongo was formed, which included six boats: 1-36, 1-47, 1-48, 1-53, 1-56, 1-58. The results of the operation were as follows. On January 12, 1-47 damaged the American freighter Popiis E055, on January 20, 1-48 unsuccessfully attacked the harbor at Ulithi, and three days later she was sunk during a second attack. On January 24, 1-36 damaged the Matata transport carrying ammunition and an infantry landing craft [.ÿ1-600. Boat 1-53 was lost on 23 January. In total, the detachment fired 15 Kaitens, one of which exploded immediately after separation from the carrier submarine. 9 torpedoes could not be used due to accidents and malfunctions.

In the second half of February 1945, the Americans began landing troops on the island of Iwo Jima. To counter the amphibious landing, the Japanese sent a group of Tibaya submarines consisting of [-368, 1-370 and 1-44 with Kaiten on board. The actions of the group ended in complete failure, because not a single torpedo was fired. Moreover, on February 25 boat 1-370 was lost, and the next day - boat 1-368. To be

Regama Iwo Jima was sent a new detachment "Kamitakz", which included submarines [-58 and [-36. However, already on the approaches to Iwo Jima, the operation was canceled, and the boats were ordered to return. Operations with the Kaitens resumed again at the end of March, when the Tatar detachment went to sea, consisting of four boats: 1-47, 1-56, 1-58 and 1-44, each of which carried six man-guided torpedoes. . However, on March 28, 1-47 was damaged by ships of the US 5th Fleet near Okinawa and was forced to return to Kure for repairs. All other boats were lost: 1-58 - March 31, [-44 - April 10, 1-56 - April 18,

The heavy losses of submarines forced the command of the Japanese fleet to change the tactics of using the Kaiten, it was decided to attack the ships at the crossings, which made it possible to avoid overcoming the powerful anti-submarine defense systems of the American naval bases. Submarines 1-47 and 1-36, part of the Amatake detachment, left the base on April 12 and 20, respectively, to carry out attacks on moving ships. They fired eight of the twelve available torpedoes, but the Americans did not report their losses during this period of time. On May 5, submarine 1-367 sank 2 enemy ships of an unidentified class with two of its five torpedoes near Okinawa Island. The next day, the boat 1-366, while en route with the Kaiten, hit a mine near Hikari. Submarine 1-367 successfully attacked on May 27 the guard ship Ovap, which was damaged by the Kaiten. On June 28, the boat [-36 carried out an unsuccessful attack by the Katenami on the transport ship Apiages southeast of the Mariana Islands, the destroyer Zrgo$op, having arrived in time to help the transport, sank one man-controlled torpedo and damaged the boat 1-36.

On July 24, the patrol ship Opdeg escorted a convoy carrying the 96th Infantry Division of the US Army after heavy fighting in Okinawa, the convoy was on its way to the Philippines for rest and replenishment. Around noon, when the convoy was about 150 miles from Luzon, Opdegush was spotted by U-boat 1-53 carrying six human-guided torpedoes, supplemented by conventional torpedoes. At launch, it turned out that two human-controlled torpedoes were out of order, so only four went on the attack

tyre torpedoes. During the ensuing battle, Opdetoshi sank one torpedo with depth charges. The second torpedo was almost rammed by support vessel 157-991, but the torpedo slipped under her keel without exploding. This torpedo was then diverted to attack Opdet. At this time, Chideg Sh rammed and sank another attacking torpedo. However, a few minutes later, he was blown up by a redirected second torpedo, which rammed him on the right side of the bow. The result was catastrophic. The destruction caused by the human-guided torpedo has been increased

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simultaneous explosion of steam boilers and ammunition. As a result, the ship broke into two parts, the front part sank almost immediately, while the stern part remained afloat for some time. 122 of Opdeg B's 190 crew members were killed.

"Kaiten-4"

In August, the Kaiten attacks continued: on August 5, the patrol ship Eap Joopzol was damaged; on August 9, the patrol ship Joppie Niÿsÿÿlÿ was sunk; on August 12, the submarine 1-58 carried out an unsuccessful attack on the transport Oak NSh. At the end of the war, in preparation for the Allied invasion, the Japanese created a base of human-guided torpedoes on the island of Kyushu. The Japanese claimed that during the use of the Kaitens, they sank about 40 Allied ships, but the Americans recognized only the loss of the tanker Mÿÿÿÿÿsipema, the patrol ship OpdegPI and one merchant ship.

Characteristics of "Kaiten-1": crew - 1 person, length - 14.75 m, diameter - 1.0 m, displacement - 8.3 tons, weight

warheads - 1360 kg, maximum speed - 30 knots, range - 78 miles at a speed of 12 knots.

Characteristics of Kaiten-2: crew - 2 people, length - 16.81 m, diameter - 1.35 m, displacement - 18.4 tons, warhead weight - 1550 kg, maximum speed - 40 knots, range - 83 miles.

Characteristics of Kaiten-4: crew - 2 people, length - 16.5 m, diameter - 1.35 m, displacement - 18.37 tons, warhead weight - 1800 kg.

10. SUPER SMALL SUBBOATS

The combat use of submarines began in the 19th century. For example, during the American Civil War, primitive submarines armed with spar torpedoes were used. The spar torpedo was an explosive charge on a long pole that was attached to the bow of the boat. This type of submarine included the Pamd, which was more of a semi-submersible boat powered by steam. During testing, the prototype "David" was sunk by waves from a passing steamer, but was raised and manned by a new crew of volunteers. In October 1863, during the attack, the boat damaged the armored ship Meh hornsijes, but at the same time sank along with the crew.

Four months later, G. Hunley built a boat of his own design in Mobile (Alabama). The Hunley apparatus was closer to a true submarine, since it could make short dives. However, this boat was very dangerous in operation, it sank three times, killing 23 people, including its inventor. Raised for the fourth test, she was named Nipeu after her designer. On the night of February 17, 1864, the submarine headed for the frigate Nopzayutis in order to attack it. Despite the fact that the boat was discovered by observers from the frigate, Nisheu managed to get very close to the ship and undermine the spar torpedo. A huge explosion lifted Nossahopis out of the water, and within a few minutes she sank astern into the water, becoming the first ship in the world to be sunk by a submarine in combat. But Nishcheu's boat itself was sunk by the wave created by the explosion, her entire crew died.

Further development of submarines as a weapon for war at sea followed the path of increasing their size and improving driving performance, reaching effective use by the beginning of the First World War. The successful operations of submarines during the war led to a sharp increase in development programs for this type of weapon in all the navies of the leading countries of the world. In the early 30s. a concept arose for the creation of ultra-small submarines, which would

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specialized in attacking enemy ships in well-defended harbors or anchorages. In 1933, this concept was officially adopted by the General Staff of the Japanese Navy, after which the construction of prototypes of ultra-small submarines (SMPS) began, delivered to the place of operation on ships or submarines.

Similar work was carried out at the same time in the USSR, where very original SMPL designs were created. So, for example, in 1934 the idea of creating a flying submarine was proposed, in the same year, prototypes of SMPLs delivered to a given area with the help of a carrier aircraft were tested. In 1935, the Italian company Caproni began work on SMPLs designed to combat enemy submarines. Just before the start of World War II, the British Navy launched work on the creation of SMPLs for sabotage operations against large enemy ships. Japanese SMPLs took part in the fighting from the first days of the Pacific War, by the end of the war they were already used for suicidal attacks on Allied ships. The German Navy began to develop SMPLs only at the end of 1943 - beginning of 1944, however, the punctual Germans managed to develop the largest number of types of vehicles of this class among all countries participating in the Second World War in the remaining year and a half before their surrender. .

lpl

In 1934, the Soviet designer B.P. Ushakov proposed the idea of creating a flying submarine (LSU), after working out several options, on January 10, 1938, the preliminary design of the boat was considered. The flying submarine was designed to destroy ships

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the enemy on the high seas and in the waters of naval bases protected by minefields and booms. Having discovered the enemy ship during the flight, LIL went beyond its visibility and landed on the water, after which it carried out an attack in a submerged position.

One of the significant advantages of LIL in comparison with traditional boats was the possibility of re-entering the target. The action of flying submarines in a group should have been especially effective, since theoretically three such vehicles created an impenetrable barrier up to 9 miles wide on the enemy's path. The LPL could penetrate the harbors and ports of the enemy at night, dive, and in the daytime conduct surveillance, find direction of secret fairways and, if possible, attack.

The design of the LPL provided for six autonomous compartments, three of which housed AM-34 aircraft engines with a capacity of 1000 hp each. With. every. They were supplied with blowers that allowed forcing up to 1200 hp in takeoff mode. With. The fourth compartment was residential, designed for a team of three people. It was also used to steer the ship under water. In the fifth compartment there was an accumulator battery, in the sixth compartment there was a propeller motor with a capacity of 10 hp. With. The body of the LIL was a cylindrical structure with a diameter of 1.4 m made of 6 mm thick duralumin. The boat had a pilot's cabin, which was filled with water during immersion, while the flight instruments were battened down in a special shaft.

The skin of the wing and tail was made of steel, and the floats were made of duralumin. Torpedoes were hung under the wing consoles on holders. The dive process included four stages: battening down the engine compartments, shutting off the water in the radiators, transferring control to underwater, and transferring the crew from the cockpit to the living compartment (central control post). However, the work did not go further than the project. |

LPL characteristics: crew - 3-4 people, take-off weight - 15,000 kg, maximum speed - 185 km / h in the air and 2-3 knots under water, power plant - electric motor with a capacity of 10 liters. With. (7.5 kW), armament - 2 torpedoes, flight range - 800 km, cruising range - 20 miles on the surface and 18 miles under water.

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APSS

In the 30s. The Ostekhbyuro (Special Technical Bureau for Military Inventions for Special Purposes) in Leningrad developed a project for an airborne self-propelled projectile (APSS), which was a SMPL. It was assumed that the APSS would be delivered to the target area by a flying boat. After launching, the APSS, depending on the nature of the task, could operate in two modes. In the first (unmanned) mode, the device was controlled remotely from the carrier aircraft and attacked the target like a powerful torpedo. In the second mode, the device was controlled by the pilot and acted like a conventional submarine, attacking the target with a torpedo. After the attack, the APSS returned to its carrier aircraft and was delivered to its base.

The body of the apparatus was divided into five compartments. A warhead with 360 kg of explosive, equipped with a proximity fuse, was placed in the forward detachable compartment. The second compartment contained a forward semi-battery of accumulators (33 elements) and part of the auxiliary telecontrol equipment. The third compartment was a command post with manual control. The pilot's seat was equipped with a control yoke, control instruments and a periscope. From above, the pilot's seat was closed by a wheelhouse with four windows and a hatch. The main part of the telecontrol equipment (receivers and decoder), ballast, leveling and torpedo-replacing tanks, as well as torpedo tube control mechanisms were also located here. In the fourth compartment there was a stern half-battery of accumulators (24 elements) and a part of the telecontrol equipment with steering gears operating on compressed air. In the fifth, aft compartment, an 8.1 kW DC electric motor with a propeller shaft is installed. The keels are equipped with four cylinders for 62 liters of compressed air used to purge tanks and operate automation elements. Between the keels there was an open torpedo tube for an 18-inch torpedo of the 1912 model. The apparatus had a warhead weighing 550 kg and could carry one torpedo. In total, two APSSs were built at the Leningrad Sudomekh plant - one (1935) in riveted design, and the second (1936) in welded design.

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Sea cruiser (MK-1) ANT-22

As a carrier, it was supposed to use the ANT-22 aircraft (MK-1 - sea cruiser) designed by A.N. Tu-field. It was a two-hull, all-metal, six-engine flying boat. Factory tests of the MK-1 began on August 8, 1934 and continued until May 8, 1935. The maximum speed at the water surface was 233 km / h, at an altitude of 3000 m - 207 km / h. The practical ceiling of 3500 m was achieved by the aircraft in 57 minutes. MK-1 in the period from July 27 to August 15, 1935 passed a full cycle of state tests. With external suspension, the data slightly decreased: the maximum speed near the water surface was 205 km/h, cruising speed was 180 km/h, and the service ceiling was 2250 m. FRN.

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ANT-22 and APSS

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However, soon interest in the MK-1 from the fleet command faded. The MK-1 flew until 1937, setting a world seaplane capacity record by lifting 10,000 kg of cargo to a height of 1942 m. However, this was not the limit for the MK-1 - in other flights not recorded as a world achievement, it lifted a load of 13,000 kg.

Characteristics of the APSS: crew - 1 person, length - 10 m, width - 1.25 m, displacement - 8 tons, speed - 4.5 knots, underwater cruising range - 28 miles, autonomy - 5 hours.

Characteristics of the MK-1: wingspan - 51.6 m, length - 24.1 m, height - 6.36 m, empty weight - 22,340 kg, takeoff weight - 33,560 kg, maximum speed - 223 km / h, range - ness - 1300 km, practical ceiling - 2250 m.

Premier League

In parallel with the APSS, Ostekhbyuro was working on the creation of a heavier air-powered submarine called APL. The concept of the use of nuclear submarines was the same as that of the APSS, i.e., delivery on a flying carrier boat in

this area, accomplishing the assigned task in autonomous navigation under the control of the crew and returning to its carrier. By the summer of 1935, the first copy of the nuclear submarine was ready. It was an SMPL with a displacement of 18 tons, two 450-mm open-type onboard torpedo tubes and a crew of four. The power plant consisted of a diesel engine with a capacity of 24-36 liters. With. for surface navigation and electric motor for scuba diving.

In August 1935, the nuclear submarine passed factory tests in the Baltic, and in November it was transported to the Ostekhbyuro base near Sevastopol for naval tests. In November, the order of the People's Commissar of Defense was issued, which ordered the construction of ten nuclear submarines, of which five were to be built in 1936. However, based on the results of nuclear submarine tests in June 1936, a decision was made. to begin production of more advanced devices under the designation "Pygmy", a prototype of which was built in the same year in Leningrad. But the tests of the Pygmy revealed a number of shortcomings that made it impossible to accept the boat into the fleet. In addition, by that time it was not possible to create a carrier aircraft capable of lifting an 18-ton apparatus into the air. Therefore, the name "aerosubmarine" was replaced by the name "autonomous submarine", which basically changed its purpose. Soon, all work on the project was stopped, and in 1939 the Ostekhbyuro was disbanded.

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In the summer of 1942, the mothballed nuclear submarines and the Pygmy were captured by the Germans; in August of the same year, one of the boats was inspected by Italian submariners from the squadron of midget boats. This is how they described it: “It was the latest unit, in the final stage of equipment, its dimensions did not differ from the Italian type CB, but the hull was slenderer and longer. The boat had a rather large but narrow trapezoidal cabin. At the middle of the height of the hull there were oblong recesses, which made it possible to place torpedoes in them. In the spring of 1944, the Germans sank both boats off the southern coast of Crimea.

Characteristics of the nuclear submarine: crew - 4 people, length - 16 m, width - 2.65 m, displacement - 18 tons, maximum diving depth - 30 m, underwater speed - 6 knots, power reserve

under water - 20 miles, autonomy - 3 days, armament - two 450-mm torpedoes and one 7.62-mm machine gun.

Characteristics of the Pygmy submersible (improved nuclear submarine): crew - 4 people, length - 16.4 m, width - 2.62 m, displacement - 18.6 tons, maximum immersion depth - 30 m, speed

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under water - 6 knots, cruising range under water - 60 miles, autonomy - 3 days, armament - two 450-mm torpedoes and one 7.62-mm machine gun.

"Flea"

In 1934-1935. In TsKBS-1, a project was developed for an ultra-small submarine, the Bloch torpedo boat. For its transportation, it was supposed to use a heavy cruiser of the X type, the project of which was also developed in PKBS-1. There were two options for placing the "Flea" on the ship: in the stern area on automatic davits and in the area of the chimney. In the latter case, the submarine was lifted aboard the cruiser using cranes.

The project was developed in two versions: option No. 1 had a diesel engine for surface running and an electric motor for underwater running, option No. 2 had a single diesel engine, which, when running underwater, operated on a gas mixture with the addition of pure oxygen. In 1939, the construction of a prototype "Flea" (option No. 2) under the designation M-400 began at the Admiralty Plant in Leningrad. With the beginning of the Great Patriotic War, its construction was stopped, by that time the readiness of the boat was 65%.

Characteristics of the Bloch apparatus (M-400): crew - 3 people, displacement - 35 tons (surface) / 74 tons (underwater), speed - 35 knots (surface) / 11 knots (underwater), cruising range under water - 25 miles, armament - two 457-mm torpedoes and one 12.6-mm DShK machine gun.

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In Germany, before the war, devices of the SMPL class, a torpedo boat, were also being developed. So, for example, in January 1941, the US 5 apparatus (Metzisskaya $sÿpe1ÿ-boog - an experimental high-speed boat) came off the slipway, armed with two

533 mm torpedoes and two 20 mm cannons. In April 1941, Uz 5 began testing, but its further fate is unknown.

SA 1/SA 2

In 1935, when Italy's relations with England deteriorated, the Italian Navy began to cooperate with the Sargopi firm, founded by the famous aircraft designer Giovanni Caproni, in the development of new types of underwater weapons. The project presented to the fleet at the beginning of 1936 and approved three months later was named Ptojes! C. The developed vehicle had a crew of two, was equipped with a diesel engine and was capable of carrying torpedoes. D. Caproni called this apparatus “submersible motor boat”, but in reality it was a submarine.

The construction of two mini-submarines called CA 1 and CA 2 began at the Caproni factory in Taliedo near Milan. The boat with a displacement of 4 tons had a strong hull, but the ballast tanks, two torpedo tubes and other components were placed outside the hull. The project provided for a crew of two, the commander was located in the compartment with navigation equipment, which looked more like an aircraft cockpit, the second crew member was located near the engine, there was enough space to stand up to his full height.

The first prototypes were delivered to the fleet in 1938 in complete secrecy. Disguised on special platforms, the vehicles were transported to Lake Iseo near Bergamo. The initial tests made it possible to identify and correct some defects. Then the devices went through long

, trials at a military shipyard in Venice. The test confirmed some already known problems, mainly related to the sensitivity of the control system, but the SMPLs were able to be controlled at speeds of 7 knots on the surface and 5 knots submerged, they were repeatedly launched without any problems. 450 mm torpedoes.

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After testing in Venice, the boats were transported to La Spezia, the largest naval base of the Italian Navy. Experience gained during trials

types, became the basis for processing the project in the direction of increasing the displacement of the boat. After completion of the tests, both prototypes were left for storage in the hangar.

Two years later, in the same vault, they were found by the technical service of the 10th AI $ flotilla, which needed SMPLs to carry out a special operation. The purpose of the operation was to carry out sabotage in the United States, in particular in New York. The plan was to bring SMPLs from Fort Hamilton up the Hudson River to blow up merchant ships near West Street.

Since the boats were in poor condition, it was decided to send them back to the factory for. full restoration, and at the same time to make some changes to their design. The refurbished tubes were redesigned, with the side torpedo tubes removed and replaced with eight explosive charges weighing 100 kg each. These charges would have to be manually attached to the bottom of enemy ships by light divers. The diesel was also removed because the boats were expected to operate like human-guided torpedoes, i.e. within the range provided by the electric motor. With the removal of the diesel engine, a place appeared to accommodate a demolition diver, who went out on a mission and returned through a specially equipped lock chamber in the lower part of the hull. Further changes included the removal of the superstructure and periscope, and instead of the superstructure, a small dome was installed with portholes for viewing. The modernization of the CA 2 boat was ordered by Chile in November 1941, and the CA 1 boat in February of the following year.

~ During unsuccessful trials, CA 1 sank at the bottom of Lake Iseo. Nevertheless, the commander of the 10th flotilla Borghese, counting on the rapid recovery of the SA 1 apparatus, planned to carry out two operations in the Atlantic with the participation of SA 1 and SA 2: one against New York and the other against the English base Freetown (the coast of Western Africa). An ocean-class submarine was required to deliver the SMPL to these targets. Borghese tried to get non-German submarines by agreement with the Kriegsmarine, but

Admiral Dönitz, commander of the German submarine forces, disagreed. At that time, the Italian Navy was still using its Atlantic submarine base in Bordeaux, so it was decided to use the ocean-going boat Geopagdo "Pa Vipsi" as the carrier of the SMPL. Taking advantage of the fact that Da Mis returned to the base on July 1, 1942 after a successful patrol, in which she sank ships with a total displacement of about 20,000 tons, she was put at the shipyard for conversion.

Tests of the carrier boat began in September 1942, on September 9, with the CA 2 apparatus on deck, she set off from Bordeaux to the sea to work out the processes for the release and selection of SMPLs. The same tests were repeated on September 15, when the feasibility of these operations was proved. A few days later the Geopagdo Boat Yua Oops! was already ready to go to New York, but due to the autumn-winter storm season in the Atlantic, the operation was postponed to next year. Some sources claim that Borghese delayed the start of the operation, deciding to wait for the completion of the construction of the SA 3 and SA 4, newer and more promising SMPLs. |

Meanwhile Pa Uts! carried out two successful raids - one in the Atlantic and the second - in the Indian Ocean. However, at the end of May 1943, when returning from the second raid, the boat was sunk by British ships - the destroyer

, AcNue and frigate No. 3$. No one was left alive from the submarine crew, and the 10th flotilla lost its only carrier boat and its crew, trained to work with

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SA devices. Boat CA 2 was requisitioned by the Germans in Bordeaux after the capitulation of Italy, she remained at this base until the end of the war.

Characteristics of SA 2 (after modernization in 1941): crew - 3 people, dimensions - 10 x 2 x 1.6 m, displacement - 11.8 (surface) / 13.8 (underwater) tons, maximum speed - 7 (on the surface) / 6 (under water) nodes, the power plant is an electric motor with a capacity of 28 liters. With. (21 kW), range - 70 miles at a speed of 2 knots, maximum immersion depth - 47 m, armament - 8 charges of 100 kg.

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SA Z/SA 4

· A new modification of the SMPL, designed for dropping saboteurs, had a slight increase in tonnage compared to the previous type of SA. The overall dimensions of the boat remained almost unchanged; this made it possible to place SMPLs on the deck of Italian ocean-going submarines. The hull was given better streamlining, bow rudders were installed with simultaneous modernization of the stern rudders. These changes were not intended to increase the maximum speed, but were aimed at increasing the maneuverability of the boat, reducing the wake in the water and reducing visibility at shallow depths. In total, in 1942-1943. Two prototypes of the new modification were built, which were given the designations CA 3 and CA 4. When Italy capitulated, these two boats were already in operation, and their crews were finishing their training, preparing for the attack on New York, scheduled for December 1943. Both the boats were scuttled by their crews on 9 September 1943 at La Spezia.

Characteristics SA 3 / SA 4: crew - 3 people, gaba

rita - 10.5 x 1.9 x 1.8 m, displacement - 12.6 (surface) / 13.8 (underwater) tons, maximum speed - 7 (on the surface) / b (under water) knots, power plant - an electric motor with a capacity of 28 liters. With. (21 kW), range - 70 miles at a speed of 2 knots, armament - eight charges of 100 kg and twenty charges of 20 kg.

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Firm Sargopi in May 1941 began the construction of a new SMPL under the designation SV. It was an enlarged version of boats of the SA type of the 1st series (before modernization) and was intended to protect the coast and harbors. A total of 22 boats were laid down, of which only 12 boats (SV 1 - SV 12) entered service before September 1943. The remaining 10 unfinished boats were captured by the Germans after the capitulation of Italy.

Six boats (SV 1 - SV 6) at the end of construction made several combat exits in the Mediterranean, but without much result. Soon they were sent by land transport from La Spezia to Constanta (Romania) to participate in hostilities against the Soviet Union. On
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On the Wet-German front, the boat operated as part of the 4th flotilla, its zone of operations was the western regions of the Crimean coast. SV 5 in June 1942 was sunk near Yalta by a Soviet torpedo boat, in the same month, 10 miles south of Cape Sarych, SV 3 sank a Soviet submarine S-32. The previously planned transfer of SV boats from the Black Sea to the Caspian Sea was canceled due to the defeat of the Germans near Stalingrad and their subsequent retreat. In January 1943, the ships of the Italian Navy were withdrawn from the Black Sea, but they could not return, since the Black Sea straits were blocked by the Allies, and the way to the Mediterranean Sea for the SV boats through the Balkans was blocked by the Yugoslav partisans.

After the signing of the armistice between Italy and the Allies, the SV boats, along with other Italian submarines, were captured by the Germans and handed over to the Romanian fleet. After

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the retreat of the Germans, some of the boats were flooded, and the SV 3 boat was captured by Soviet troops. On October 20, 1944, SV 3 was assigned to the Black Sea Fleet of the USSR under the designation TM-6 (trophy small). February 16, 1945, due to unsuitability for further combat use due to technical condition, was excluded from the Soviet Navy and transferred to a separate training division of submarines for use in training purposes. In 1955, it was dismantled for metal.

SV characteristics: crew - 3 people, dimensions - 14.9 x 3.0 x 2.1 m, displacement - 35.4 (surface) / 45 (submerged) tons, maximum speed - 7.5 (on the surface) / 6.6 (under water) node, power plant - diesel engine with a capacity of 90 liters. With. (67 kW) and an electric motor with a capacity of 100 liters. With. (74.6 kW), range - 50 miles under water at a speed of 3 knots, armament - 2 torpedoes or 2 mines.

SMPL class X

The construction of the prototype of the English X-class SMPL began in 1939, after completion of tests in Scotland in October 1942, the device received the designation X-3 (X-1 was an experimental submarine built back in 1925, and X-2 represented a captured Italian submarine). At the beginning of 1942, the second apparatus was built

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under the designation X-4. The construction was carried out at the firms Magkkat (Chesterfield), Vgoadbet5 (Huddersfield) and MagzaP (Gein-sboro), the program was accompanied by enhanced secrecy measures.

SMPL X series

Training with X-submarines was carried out at the floating base Bonawepte in Loch Striven, in an isolated area in the west of Scotland, using the obsolete battleship Majaua from the First World War as a training target. The training of the crews took place with the development of all stages, including cutting networks, evading and rescuing personnel. Drills were also held on the SMPL, subjected to depth charge explosions, to familiarize the crews with what would happen during an attack. Two people died during training.

, The robust body of the apparatus consisted of four compartments. The first compartment contained control instruments and navigational equipment, the second compartment was used as an air lock chamber, and the main ballast tank was located in its hold. The third compartment contained batteries, a control post, main ballast tanks, quick dive tanks, and periscopes. The fourth compartment housed a diesel engine, an electric motor, a fuel tank, a compressor and a stern trim tank. The main ballast tank, towing and mooring devices were located in the bow of the hull. The X-apparatus team consisted of four people: commander, assistant

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commander, mechanic and diver. During the trip, the crew consisted of three people, since there was no need to have a diver on board, while the X-apparatus was in tow.

X-5—X-10

The armament consisted of two mines weighing 2 tons each, which were attached to the sides of the submarine. The containers of mines had zero buoyancy, provided by buoyancy compartments, and were separated using a special device controlled from the hull of the boat. The charges were detonated by a fuse with a clock mechanism, which was also switched on from a solid body. The alparat had to come close to the target, drop mines under the bottom of the target and have time to go to a safe distance before the explosion of the charges. The X-submersible used a conventional diesel engine on the surface and an electric motor when submerged. He could

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be towed to the target area by conventional submarines, hung from below to surface ships, and also transported on the decks of submarines or surface ships.

In December 1942, Maskegs began building six SMPLs (from X-5 to X-10) for operations in Europe. It was assumed that the vehicles X-5, X-6 and X-7 would have to attack the German battleship Tigrii2, which was stationed in Altenfjord (Norway), X-8 should attack Glito \, and X-9 and ÿ-10 - ÿÿÿÿÿÿÿÿÿÿÿ. By September 1943, six vehicles with trained crews were ready to carry out their missions. Towing the SMPL to Norway with the help of large submarines lasted eight days, during which time the Kh-9 sank, and the AH-8 had to be abandoned due to damage. At 50 miles from the target, the four remaining SMPLs switched to an autonomous course

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at the expense of their engines and went towards the minefields and anti-submarine barriers to the anchored battleship Tigrÿÿkh. SMPL X-10 penetrated the inner fjord, but due to mechanical defects was forced to abandon the attack. Amid harassing enemy patrols, her captain skillfully concealed his small boat for five days before he could finally return to the tugboat. X-10, however, sank on the way back to England.

On September 22, 1943, X-6 (commander - Lieutenant D. Cameron) and X-7 (commander - Lieutenant B. Place) followed the old cargo ship through a series of barrage nets and reached their target within a few minutes of travel. The guards, having discovered one of the devices, raised the alarm, but the X-6 managed to climb under the huge ship and drop both mines, after which it got entangled in the underwater nets and was forced to surrender to the Germans. Kh-7 also fired two mines at Tigriyokh, but before the vehicle could escape, the first of the Kh-6 mines exploded, damaging Kh-7 as well, after which the damaged Kh-7 was soon forced to surrender. The third submarine was discovered and came under heavy German fire, it was the X-5, which was never seen again. The result of the attack on TyrI2 was assessed by the British as successful, although the mines dropped did not sink the battleship, but the damage they caused led to the need to tow it south for repairs.

XE-class vehicles, with air conditioning and additional volume for magnetic mines, were developed for operations in the Pacific Ocean. Spring-loaded supports made it possible for the SMPL to rest on the seabed, and the lock chamber allowed the diver to leave the apparatus and fix mines on the hulls of enemy ships. Of the first six XE-class vehicles built by Mackers, the XE-3 under the command of Lieutenant J. Fraser, which on July 31, 1945 attacked the heavy Japanese cruiser Takao, became the most famous and successful. After starting from the tugboat, XE-3 maneuvered for more than 24 hours to take a convenient position to attack the cruiser anchored in the Strait of Johor (Singapore). After his first attempt failed, Fraser went around the target in a circle and brought his boat under the bottom of a large ship. Despite the difficulties in the form of algae and mollusks on the cruiser's plating and a leak in his diving equipment

zhenii, the diver of the boat D. Magennis managed to attach the mines to the skin, after which he returned to the boat.

During the next stage of the attack, the jammed empty container for magnetic mines did not allow the two main mines to be thrown from the sides. Magennis volunteered to go back, he spent 15 minutes in the water, freeing large mines. All this time, the SMPL and the diver were very vulnerable, being in clear water. Ultimately, the boat was freed from the main mines, while she was returning to the mother submarine, the charges exploded, sinking the 11,000-ton ship.

Five additional XE apparatus were soon built. However, XE-11 was lost in a collision with a ship at Loch Strevene in March 1945, and the remaining four vehicles were

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sent for scrap in 1952

During 1943-1944. MisKergs built six XT-class SMPLs for training purposes. With a range of only 500 miles at 4 knots, the XT boats were a simplified version of the X-5 without external mine release, night periscope and autopilot. In addition, a day periscope, a compass with image transmission to the screen, and an air intake pipe were installed in the upper (extended) position. An order for twelve more apparatuses, placed in 1943 with the company Broybenus Niddetzye!a, was soon canceled. Six built boats from this batch were scrapped at the end of the war.

Six boats (Kh-20, Kh-21, Kh-22, Kh-23, Kh-24 and Kh-25) were used to reconnoiter the coast of Normandy before the Allied landings. So, for example, the X-20 boat spent four days off the French coast. During the daytime, periscope reconnaissance of the coastline and sounding of the bottom topography were carried out using an echo sounder. Every night, the X-20 came close to the shore and landed two people who examined suitable places for the upcoming landing and took soil samples.

SMPL X-20 and X-23 took part in Operation Sashbi ("Gambit"), which arrived at the position on June 4, 1944 and, due to a delay caused by difficult meteorological conditions, remained there until 4:30 am on June 6. After that, they surfaced, raising navigation equipment, a 5.5-meter telescopic mast with

a searchlight that shines in the direction of the sea, a radio beacon and an echo sounder that transmitted messages for minelayers. The Americans, not trusting the English method of marking the shore with X-apparatuses, landed using their navigational aids. As a result of the landing, the American forces were carried to the west by strong coastal currents and landed at the wrong place where they had planned.

Another boat, X-24, made two raids on Bergen (Norway) to sink the floating dock. Kh-22 was damaged in a collision with the towing submarine 5Ur 5 in difficult meteorological conditions in Pentland Bay.

Characteristics of X-5: crew - 4 people, dimensions - 15.8 x 2.6 (with hanging containers) x 2.2 m, displacement - 27 (surface) / 30 (submerged) tons, maximum speed - 6, 3 (on the surface) / 5.8 (under water) knots, the power plant is a diesel engine with a capacity of 42 liters. With. (31 kW) and 25 hp electric motor. With. (18.7 kW), range - 82 miles under water at a speed of 2 knots, immersion depth - up to 91 m.

Characteristics XE: crew - 4 people, dimensions - 16.2 x 2.6 (with hanging containers) x 2.2 m, displacement - 30.3 (surface) / 33.6 (underwater) t, maximum speed - 6.5 (on the surface) / 5.0 (under water) knots, power plant - diesel engine with a capacity of 42 liters. With. (31 kW) and a 30 hp electric motor. With. (22.4 kW), range - 80 miles under water at a speed of 2 knots, armament - 2 external charges.

Characteristics of the XT: crew - 4 people, dimensions - 15.7 x 1.8 x 2.1 m, displacement - 26.7 (surface) / 29.8 (underwater) tons, maximum speed - 6.5 (on the surface) sti)/5.5 (under water) knots, the power plant is a diesel engine with a capacity of 42 liters. With. (31 kW) and 30 hp electric motor. With. (22.4 kW), range - 80 miles under water at a speed of 2 knots.

Ume! tap

SMPL Meta was originally conceived as a single-seat vehicle for reconnaissance of the coast. The boat did not have a periscope, and observation was carried out through the segments of the armored

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glass in a small conning tower. According to some reports, during the war more than 100 vehicles were built at the Mottis car factory in Oxford. The prototype was tested at Loch Cairnbone (Scotland), but was lost during training.

In the fall of 1943, the commander of the joint special forces, General R. Laycock, came to the conclusion that Metal was not suitable for their purposes, so the device was returned to the Navy. The command of the Navy considered that an apparatus equipped with a mine could be useful for attacks on German ships located in the coastal waters of Norway. This task was entrusted to the 30th flotilla, composed of officers (people from the Norwegian Navy also served in it).

On November 20, 1943, two torpedo boats left the base, carrying four vehicles: No. 45 (Norwegian lieutenant K. Jonsen), No. 46 (Norwegian lieutenant B. Pedersen), No. 47 (English lieutenant B. Marris) and No. 48 (English Lieutenant D. Holmes). They were supposed to simultaneously attack the floating dock in Bergen and the ships in the area. For various reasons, the operation failed. The M/46 was entangled in the anti-submarine net and was forced to surface, after which it was attacked by a German patrol ship. Pedersen was captured along with his submarine. The Germans raised the alarm, so the three remaining vehicles could not carry out attacks. Ultimately, all three vehicles were abandoned and sunk by their pilots, who then headed north, and in the end they managed to stay alive. Pedersen survived the war in a POW camp. Apparatus No. 46, which fell into the hands of the Germans, was carefully studied by them. The principles and features of the design solutions used in the British apparatus formed the basis for the development of the German Nesse SMPL. After this unsuccessful raid, the British concentrated their efforts on the devices Hee Hee.

Characteristics of Meitap: crew - 1 person, dimensions - 6.1 x 1.06 x 1.3 m, displacement - 2.09 tons under water, maximum speed - 3 knots under water, power plant - electric motor 25 l. With. {18.7 kW), range - 36 miles under water, armament - one 540-kg mine.

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mm/ente! uÿtag

In November 1942, the research bureau ÿÿÿÿ (Pieg Zeguse Kezeatsÿ Vigeam) began the development of the SMPL project, intended for reconnaissance of the coast, transportation of intelligence agents during sabotage and sabotage operations, as well as mining targets in enemy waters. Bureau IZVV was a structural subdivision of the British wartime sabotage service SOE (Bresta! Oregiops Echeshue), which was responsible for helping resistance organizations in the territories occupied by the Germans.

At the end of the summer of 1944, the Admiralty issued a contract for the production of a batch of SMPLs to the company 56:11 (Speyoke & Autumna), which produced trucks, which were known under the name S0-Ereleter. For reasons of secrecy, production was organized at the firm's plant in Letchworth, located 75 miles from the nearest coastal town. Not far away, near the town of Welwyn (Meup), there was a test station ÿÿÿÿ (station ÿÿ). A special subdivision was created at the plant, which was engaged in the construction of the first batch of 6 devices, which received the designation Meteza er. The name of the apparatus was composed of the name of the location of station ÿÿ and the name of the company's trucks (5ÿ ÿÿÿÿÿÿÿÿÿ). The entire production process of the devices was under constant surveillance by the secret services of the Navy. Few of the 5& employees knew until the very end of the war what was being built on
factory.

Structurally, the Mee12Cher resembled a small boat, 11.1 m long and 2.28 m wide. s., which set in rotation a large 4-bladed propeller. In the immersed state, the apparatus was brought to

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movement by two electric motors with a capacity of 2 liters. with., which rotated small screws.

In the middle part of the boat there was a cabin for the crew (commander and mechanic), a little lower and in front of it there was a living compartment, in which from 2 to 4 intelligence agents could be transported. In the cabin, the shape of which was different for different modifications of the boat, there was a sealed access hatch on top, and on the side walls all-round viewports for controlling the boat on the surface.

In front of the wheelhouse there was a periscope and a magnetic compass tube. The taller of these was the periscope, which served a dual purpose. When submerged, the situation was monitored through it, and when moving on the surface, a mast and a sail could be attached to it in order to disguise the apparatus as a fishing schooner. The tube of the magnetic compass was made of copper, the readings of this compass were projected into the lower part of the tube, and then the image was transmitted through a prism to a frosted glass screen, which was in front of the commander. ·

Behind the wheelhouse, on the cargo deck, there was a battery of six high-pressure air cylinders intended for purging ballast and trim tanks, a rescue boat was attached, and seven cylindrical containers were installed, in which special cargo was located. The containers were hermetically sealed and had a small reserve of buoyancy to facilitate their towing to the shore during the landing of agents.

The power plant of the boat (diesel and electric motors) and a small desalination plant were located under the cargo deck, and the fuel tank, fresh water tank, batteries and oxygen tanks were located under the living compartment.

Y'eShe1=Scheg was intended for operations at night. Under the cover of darkness, he walked on the surface, plunging into the water as necessary to avoid detection. After unloading agents and containers with Mue Teja equipment, he went to sea and lay down on the bottom, waiting for the agents to return. At the agreed time or at a signal from the shore, he rose to the surface and took the agents. The operation could also be carried out, if necessary, in conjunction with a large surface vessel or submarine.

Each boat built was taken out of the factory under the close supervision of a Navy officer. The apparatus was loaded onto a special trailer, covered with a thick tarpaulin and transported at night to station IX in Welwyn. There, in a huge hangar, there was a deep-water pool, in which the initial tests of the apparatus were carried out. After that, the device was handed over to the ÿ5KV staff, which was engaged in the installation of special equipment on the device, as well as its adjustment and adjustment during the tests of the device in

pool. As soon as the tests were completed, each Verteurver was subjected to demagnetization in order to avoid detection by the enemy during operation and to be safe from magnetic
min.

The fully prepared Metejajeer was again dismantled, loaded onto a heavy transporter and, under the supervision of the same officer who accompanied the device to the hangar, transported to the T5EB test base in Fishguard in west Wales, where sea trials and delivery of the device to the commission were carried out. At the very beginning of testing samples from the first batch, a problem arose with the stabilization of the apparatus - during towing to the Clyde for naval tests, one apparatus turned over. To eliminate the shortcomings, the device had to be modified.

By October 1944, the order for Meteivever placed with $&0 had grown to a total of 48 machines. In total, 8 modifications were to be built (from MK [to MKUSH), 6 devices in each modification. However, it had already become clear that the military situation in Europe had turned into

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in favor of the Allies, so the use of Meteive in its original form was no longer required in European waters. Then by

there were considerations to apply U \! e ge! Meg in the war against Japan. In early November 1944, two vehicles were sent to Australia to be tested in tropical waters. In the meantime, testing of new devices and training of crews continued in Fishguard.

Tropical testing began in January 1945 at the military base of the Department of Intelligence 5BO (Seguises Quesoppaiscapse Peragsteppe) on Garden Island near Fremantle, Western Australia. A training base was equipped here to prepare crews for covert operations. Tests were carried out in March 1945, and later the vehicles were towed to the KO base in Darwin.

In July-August 1945, the ZVO was expecting the delivery of 10 more UVGe12 Met vehicles from England: 6 vehicles were to be based in Morotai, south of the Philippines, and 4 vehicles in Australia. Two vehicles that had previously arrived in Australia were to be used as a source of spare parts. Although by then the firm was 581) producing one Muentejoteg per week, the contract was reduced to a total of 32 machines instead of the original 48. However, data on
What

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U'eNeeScheg was used in combat operations until the end of the war, no, although the Allies intended to use it during the landings on the Japanese islands. According to inventory data dated September 13, 1945, 19 Meeleg apparatuses were stored in 15EV warehouses in London.

VBeg The development of the German boat Vibet ("Beaver") began on the initiative of Bartels, who in January 1944 agreed with the company Nepaegme!gKe in Lübeck on the construction of an experimental apparatus, known as Vshte-Boog or Ayat. The development of its design took only 6 weeks, it was completed by March 15th. Tests of the device were carried out under the leadership of Bartels on the Trava River, and on March 29 the device was already put into operation. Initially, they ordered the construction of an experimental series of 24 boats with a delivery date of May 31, 1944. Since it was not possible to find a diesel engine of suitable sizes for the boat, they settled on the Ore1-Bÿÿ2-Moyoge engine.

The Bieber hull consisted of three sections connected by bolts. A ballast tank was located in the bow section, between the first and second bulkheads there was a main compartment with a cockpit for the pilot, the third compartment contained a rear ballast tank. SMPL had an electric motor Bio-EM with a capacity of 13 liters. With. and a 32 hp OM petrol engine. With. from the truck ÿre1-ÿÿÿ2. Maximum external pressure

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The pressure that could be resisted corresponded to a depth of 30 m, and the pilots could only dive and lie on the ground when trying to escape. The inherent disadvantage of the gasoline engine became apparent when, from time to time, pilots began to die during a combat mission as a result of carbon monoxide poisoning. Many of the missing Biebers met a similar fate, so the Biebers, like other ultra-small submarines, were manned by volunteers. A total of 324 vehicles were ordered for delivery during 1944: 3 vehicles in May, 6 in June, 19 in July, 50 in August, 117 in September, 73 in October and 56 in November. Some built devices were destroyed during the bombing of Kiel by Allied aircraft.

The first combat unit of the Bibers was 261.K-Ejoshe, which was part of Geÿgkottapdo 250. When Geÿg-Kkottapao 250 was fully equipped, it included eight K-flotillas. On the night of August 29-30, 1944, near Fecamp (France), eighteen Bibers went on a mission. After a safe return to their base, the Germans announced that during the attack, a landing craft had been sunk and the Liberty ship had been damaged, but from the reports

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Allies followed that there was no attack at that time. Ironically, most of the Biebers sank the next day while the Germans were evacuating Fecamp. The few vehicles that were able to be loaded onto vehicles and evacuated were destroyed during a night attack by advancing Allied armored forces.

The range of planned operations with the Bibers was wide. One of them was Operation Caesar, an attack on the Soviet battleship Arkhangelsk (formerly the English battleship Koya | Souegeivp), which was anchored near Murmansk. Submarines 0-295, O-716 and 0-739 left Harstadt in Norway on January 5, 1945, each boat carried two Biebers. However, the operation was interrupted because the Bibers were found to be leaking fuel from pipelines caused by constant vibration. It was also planned to use the Bibers for sabotage against the allied Piojo offshore oil pipeline. Combat swimmers had to drill a hole in the pipeline and introduce a corrosive liquid that would destroy the engine.

drivers of any vehicles using "contaminated" fuel. Another plan was to drop the Biebers into the Suez Canal from a Vu 222 seaplane, where they would block the canal by sinking one of the ships there.

The statistics of the combat use of the Bibers are gloomy:

December 22/23, 1944 - out of 18 vehicles that went on a mission, 4 vehicles were sunk by English torpedo boats while still being towed to a given area, one was blown up by a mine, 12 vehicles did not return after the operation, and as a result of the operation they were sunk only one English ship with a displacement of 4700 tons;

December 23/24 - 11 vehicles went on a mission - none returned;

December 24/25 - 3 vehicles went on a mission - none returned;

December 27 - 14 Bibers were prepared for the operation, however, two accidentally exploded torpedoes destroyed 11 vehicles, the remaining 3 vehicles went on a mission - none of them returned, one of them, Vibeg No. 90, was discovered two days later by the British the Queadu ship drifting at sea with a dead pilot;

January 29/30, 1945 - out of 15 vehicles that went on a mission, one sank after a collision with a floating ice floe, 5 vehicles were forced to return with damage from ice floes, one was found washed ashore after spending 64 hours at sea in search of a target, 5 vehicles failed to return;

March 6 - due to an accidental explosion of torpedoes, 14 vehicles sank, and 9 were damaged, on the same day 11 Biebers went on a mission - none returned;

March 11/12 — out of 15 vehicles, only 2 returned from the mission;

March 23/24 — out of 16 vehicles, only 7 returned to the base;

April 1945 - only 24 Biebers were at the base in Rotterdam, of which only 5 vehicles remained after participating in four operations.

The Bieber's shortcomings - a dangerous gasoline engine and the physical strain of a single crew member while operating the device - led to the development of two

of the local apparatus of Veg P at Nepdegmetke. However, work on Vibeg P was soon suspended, and the development of SMPL Vireg Sh with a 60-hp OM engine began. With.,

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working in a closed loop. In November 1944, an experimental model Beg III was tested, tests were continued in January 1945, but due to the lack of closed-cycle engines, the engine from the first version of the device was used. At the end of the war, this sample fell into the hands of the British. Characteristics of Veg I: crew - 1 person, dimensions - 10.4 x 1.6 x 1.37 m, displacement - 6.3 tons under water, maximum speed - 6.5 (on the surface) / 5.3 (under water) node, the power plant - a gasoline engine with a capacity of 32 liters. With. (23.9 kW) and an electric motor with a capacity of 13 liters. With. (9.7 kW), range - 130 miles on the surface and 8.6 miles under water, armament - 2 torpedoes. Characteristics H\er W: crew - 2 people, dimensions - 11.8 x 2.5 x 2.7 m, displacement - 12 tons under water, maximum speed - 8 (on the surface) / 5 (under water) knots - fishing, power plant - closed-cycle diesel engine with a capacity of 60 liters. With. (44.8 kW), range - 1100 miles on the surface and 100 miles under water, armament - two torpedoes.

Nes!

At the beginning of 1944, at a meeting with Hitler, Dönitz reported on the need to develop boats of the XXUP type, which were supposed to be used for mining enemy ships. The result of the meeting was the adoption of a decision on the development of SMPL Nesi (XXUPA type).

Double boat Ness! (“Pike”) was to be equipped with a removable mine in the bow. The design of the boat also provided for a compartment for receiving or releasing two combat swimmers. Transportation of the boat to the place of combat use was carried out using a towing vessel or a submarine. The originally planned cruising range was 90 miles (166.7 km), but since it was not possible to develop a small-sized gyrocompass for this boat, the designers were forced to use a standard gyrocompass, which was heavy, took up a lot of space and consumed a lot of electricity. As a result, the size of the boat has increased due to the reduction of the cruising range.

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At the beginning of March 1944, in Kiel, the construction of three prototypes of the boat began at the Beppatsha-Metz firm. However, disagreements arose regarding the composition of the combat load of the boat. The Kriegsmarine command demanded that the boat be able to carry torpedoes for operations near the coast against enemy surface ships. Therefore, they began to consider the possibility of equipping boats with a torpedo or a drop mine. When equipped with a torpedo, additional batteries were located in the bow of the boat instead of a mine, which made it possible to increase the cruising range. At the end of March, Segtapia-Met received an order for a serial batch of boats, but soon work on the construction of the boats was interrupted. The built Nes boats, designated from 00-2111 to 17-2113 and from 0-2251 to 0-2300, were used in 311.K-E]onShe (Teÿg-Kkottapdo 300) only for personnel training. As soon as the Nes project was terminated, the Kriegsmarine directed all its efforts to the development of the Seyhip SMPL.

Type XXII. Project

_ Characteristics of Nesn (: crew - 2 people, dimensions - 10.5 x 1.7 x 1.52 m, displacement - 12.5 (surface) / 17.2 (underwater) tons, maximum speed - 5.6 (on the surface) / 6 (under water) knots, power plant - electric motor with a capacity of 13 liters. With. (9.7 kW), range - 78 miles on the surface and 40 miles under water, armament - one torpedo
or one mine.

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Moÿsÿe

The first prototype Moÿsÿe (“Salamander”) began to be tested in Eckernförde on June 12, 1944. The device was equipped with a plexiglass dome and carried two torpedoes. However, unlike the Bieber, the Molhe had only an electric motor, a motor for surface navigation.

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was removed, so the problem of the negative impact of the products of the cancellation on the pilot was solved. Because of this, the maximum cruising range was reduced to 50 miles at a speed of 4 knots.

During the autumn of 1944, the first combat unit 411.K-NobPe (60 vehicles) was deployed in northern Italy, where it did not achieve any success. The second unit, 412.K-Ejoshe, also showed low efficiency during December 1944 in operations off the coast of Holland. The third and fourth units, planned for use in Holland and Norway, were never deployed. A total of 363 vehicles were built, but since Mosse was not successful in combat operations, it was then used as a training apparatus in training pilots for more advanced mini-submarines. Results: from January to April 1945, Mossje and Vet took part in 102 raids, their own losses amounted to 70 vehicles, and they sank only 7 small enemy ships with a total displacement of 491 tons and damaged 2 ships with a total displacement of 15,516 tons.

Characteristics Mo [sPe: crew - 1 person, dimensions - 10.73 x 1.8 x 1.8 m, displacement - 11.0 tons (underwater), maximum speed - 4.3 (on the surface) / 5 (under water)) nodes, the power plant is an electric motor with a capacity of 13 liters. With. (9.7 kW), range - 50 miles under water, armament - two torpedoes.

Seehopa (Ture XXUNV)

The Seecipd ("Seal") proved to be the most successful SMPL of those devices that were created in Germany. By June 1944, five prototypes had been developed under the designation Type XXUPV, all of which differed in some details. The final version, type XXUPV5, was a midget submarine with a crew of two, carrying two external torpedoes. On the surface of the submarine

It was propelled by a 6-cylinder Bisspe car engine, and under water by an electric motor. Seecipe's boat was capable of descending to a depth of 70 m (although only 30 m were achieved in shipyard tests) and had a remarkably short sink time of 3 seconds. As the Zeešipa proved to be the best of the German midget submarines, it was the only one chosen for further mass production. Until the end of 1944, 169 vehicles were delivered, in total, 285 boats were completed by the end of the war, 93 boats were found after the war at shipyards in various stages of construction. The construction of boats went on in Kiel (Nomaÿyÿÿmegke - 3 and Segtapÿamegÿÿ - 97), Elbing (from piles - 102), Ulm (Keskpeg - 50), as well as in Graz (5ipteppg) and Vienna (Paskeg).

= 8 HP ERI

Seechipa (diagram)

The first Seehund operation at the mouth of the Thames in January 1945 ended in failure for them - 16 of the 18 vehicles involved were lost. The surviving crews quickly learned from this experience, and a second sortie on 17 January 1945 was without casualties. The Seehunds operated relatively successfully from February to May 1945, sinking 9 cargo ships with a total displacement of 18,451 tons and damaging 3 other ships with a total displacement of 18,384 tons. Only 10% of the boats were lost. On the other hand, according to the estimates of the allies, up to 500 ships and up to 1500 aircraft were required,

to control the North Sea and detect the Seehunds operating there on a daily basis.

In April 1945, the Seehunds carried out two special missions to supply food to the encircled German base at Dunkirk. Instead of torpedoes, the boats carried containers with

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food (they were called "oil torpedoes"), on the way back, these containers were filled with the mail of the defenders in Dunkirk. By the end of the war, the Seenhund boats participated in 142 operations, as a result of which 35 of their own boats were lost. Small submarines were extremely difficult to destroy with depth charges, requiring direct hits from aircraft. It is believed that most of the boat losses were due to difficult meteorological conditions. Operations with Seehunds ceased on 28 April 1945.

In May 1944, Kurzak proposed an air-independent diesel engine using conventional fuel and its own exhaust gases, to which liquid oxygen was added. In June 1944, an order was received to test and check

ke applicability of this engine for SMPL. After successful testing, Kurzak proposed building several experimental vessels using Seehund components. Work on them was started in Elbing and Kiel, but by February 1945 they had only managed to carry out bench tests of engines.

Characteristics of the Seaship: crew - 2 people, dimensions - 11.9 x 1.7 x 1.52 m, displacement - 14.9 (surface) / 17 (underwater) tons, maximum speed - 7.7 (on the surface) ty)/6 (under water) knots, power plant — diesel engine with a capacity of 60 hp. With. (44.8 kW) and a 25 hp electric motor. With. (18.7 kW), range - 63 miles under water at a speed of 3 knots, armament - two torpedoes.

Stop it!

Of all the new See projects! (“Monkfish”) (it also passed under the code name “Elephant”, as well as Rtoÿek! Goefve) was the most developed. Its developer was Alois Loedige, head of the torpedo development department at the test station in Eckernförde, who proposed the idea of an ultra-small amphibious submarine capable of carrying out torpedo attacks on enemy ships and transporting a group of saboteur swimmers in the sky.

The first prototype was ready for testing in July 1944. It had an interesting feature - caterpillars, similar to those on a bulldozer or on a tank, the device could crawl along the seabed: In mass production, the device had to have a 250 hp diesel engine. With. and a 100 hp electric motor. with., which allowed him to move in the underwater. position at a speed of 6 knots and on the ground at a speed of 10 km/h. The maximum immersion depth was 21 m. The Seeteuffel was supposed to be armed with two torpedoes or mines, a machine gun or a flamethrower, it could take on board 5 combat swimmers.

Since it was not possible to get a diesel engine for the experimental apparatus, an automobile gasoline engine of lower power had to be installed instead. Tests in Eckernförd Bay showed that the craft had good manoeuvrability, but the power of the gasoline engine was also found to be too narrow, due to too small. ,,,

The consequence of which is that the apparatus is often elm in soft ground. After the completion of the tests, the first batch of serial devices was ordered at the Vogemaga car factory in Bremen, but production never began. The only experimental apparatus was transported to the test station Vakhkorre] near Lübeck, where it was blown up and scuttled by the Germans before the end of the war.

Zee characteristics: crew - 2 people + 5 combat swimmers, dimensions - 14.2 x 2 x 2.5 m, displacement - 30 (surface) / 35 (underwater) tons, maximum speed - 10 (on the surface) / 6 (under water) units, the power plant is a diesel engine with a capacity of 250 hp. With. (186.5 kW) and a 100 hp electric motor: p. (74.6 kW), armament - two torpedoes and one machine gun (flamethrower).

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Reÿrÿp

The project of the PEPIT (“Dolphin”) apparatus with a displacement of 2.5 tons was developed in 1944. The apparatus had streamlined hydrodynamic shapes, as a result of which it was possible to abandon the tanks for diving and ascent, the cockpit canopy was made of plexiglass, like the Marder. This arrangement of the apparatus gave it the ability to carry out a high-speed attack under water. The device was supposed to carry one torpedo under the hull as a weapon or tow a mine weighing 1200 kg.

"Dolphin" (weapon options}

The prototype was completed in the autumn of 1944, in tests the apparatus reached a maximum speed of 17 knots in the submerged position. A total of three copies were built in the Press-Leichtbauweise. During tests on January 18, 1945, the Dolphin collided with a tugboat and sank, the remaining two vehicles were destroyed by the British in Travemünde on May 1, 19451 G. A

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MK 202. Project

The Dolphin P was more perfect, but things did not go beyond the design stage. The boat had to have a more perfect hydrodynamic shape. Armament consisted of two torpedoes or mines. The power plant is a diesel engine OCho-Kre1aiito{south for cruising on the surface and \!acer-TigYle for a short-term jerk under water. t | touch

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The Mänäger-Tschphipe engine, created at the firm of Dr. Helmut Walter, ran on hydrogen peroxide (perhydrol). This composition has the ability to decompose into water and oxygen, which can be used to operate diesel engines in a fully submerged state. An engine of this type was equipped with Walter's experimental submarines (U60, U80, etc.). When the engine was running, not only oxygen was used, but also the high temperature formed during the decomposition reaction of perhydrol (about 900 °C). The water vapor and oxygen heated as a result of decomposition were supplied to the combustion chamber, where the supplied fuel (diesel oil) was burned. The combustion products and steam formed during fuel combustion were supplied to the turbine, and from there to the condenser, in which the condensed water was separated from the residual carbon dioxide. The electricity generated by the turbine fed the electric motors of the boat. In fact, the power plant represented a power plant much more compact and lighter than diesel engines of similar power and completely independent of the external air supply. The greatest difficulties, however, arose with the manufacture and storage of perhydrol, which reacted violently with any impurity. For the storage of perhydrol, which cost about eight times more than diesel fuel, after various tests, a material neutral with respect to perhydrol was selected - synthetic rubber.

During the development of the project, the option of installing a 500-kg drop warhead on the vehicle, as well as the option of towing an additional torpedo, was considered, but the end of the war stopped all work on this promising vehicle.

Characteristics of "Delfin" I: crew - 1 person, dimensions - 5.48 x 1.01 x 1.3 m, displacement - 2.5 tons under water, maximum speed - 10 (on the surface) / 17 (under water).) nodes, immersion depth - 20-30 m, power plant - electric motor with a capacity of 13 liters. With. (9.7 kW), armament - 1 torpedo or 1200 kg towed mine.

Characteristics of “Dolphin” P: crew — 2 people, dimensions — 8.68 x 1.3 x 1.4 m, displacement — 8.0 tons under water, maximum speed — 15 (on the surface)/30 (under water) knots, immersion depth - 20-30 m, power plant - OTso-Kge!<aiitotog and Maÿeg Tshfte, armament - two torpedoes or two mines.

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bemetma!

Zemetma! (“Kasatka”) was a high-speed SMPL that could perform the functions of a fighter under water. Therefore, it was designated as a “submarine destroyer”. This project was considered in June 1944, despite the official cancellation of the development of the Walther turbine for ultra-small submarines, which made it possible to achieve an underwater speed of 30 knots. The crew consisted of two people, the device was to be equipped with two torpedoes, as an option, the possibility of towing a mine was considered. Prototype 5eÿueta!] I was an experimental apparatus, which at the end of the war was flooded in Lake Plun (part of the test site of Walter's enterprise). In July 1945, the apparatus was discovered by the British and studied in Kiel. An improved version of the bezuep! P, which began to be developed on the basis of prototype tests, remained on the drawing boards until the end of the war.

Characteristics 5eÿuetma! 1: crew - 2 people, length - 13 m, maximum hull diameter - 1.5 m, displacement - 17.5 tons under water, maximum speed - 32 (on the surface) / 30 (under water) knots, immersion depth - 100 m, power plant - Walter turbine with a capacity of 800 liters. With. (597 kW), armament - two torpedoes or a towed mine.

Characteristics of 5eÿmet! P: crew - 2 people, length - 13.5 m, maximum hull diameter - 2 m, displacement - 18 tons under water, maximum speed - 32 (on the surface) / 30 (under water) knots, power plant - Walther turbine with a capacity of 800 hp. With. (597 kW) and a 25 hp electric motor. With. (18.7 kW), armament - two torpedoes.

Sgopaÿai

In 1944-1945. a project was developed for a deep-water (up to 1000 m) submersible Sgipaÿai for rescuing crews from sunken submarines. The apparatus was equipped with wheels and caterpillars, on which it could move both on the seabed and on land. In addition, he had a manipulator, and also had three spotlights. Until the end of the war, Usta build only a prototype.

And

Walross. Project

Characteristics of Stap@Va!: crew - 1 person, length - 3.6 m, diameter - 2 m, displacement - 1.5 tons, power plant - 2 electric motors with a capacity of 30 hp each. With. (22.4 kW), speed - 3 knots under water, cruising range - 20 miles.

BEHIND ; I E Type XXXV: IE Ki In 1945, a project was developed for a two-seater boat type XXXV. The boat, 5.5 m long and 1 m wide, had a displacement of 20 tons; it had to carry two torpedoes as armament.

Mata |

The Masha project was the result of the joint work of the Walter company and Megsisszkottapdo 456. Mata was a hybrid of a trimaran and a submarine, in which three cylindrical hulls were connected by one wing.

In the middle, cylindrical, body. diameter 1.5.m. there was a crew of two people, instruments, actuators, batteries and a diesel generator. In everyone.

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of the two side buildings there was one Walther turbine, one electric motor, fuel tanks, ballast and trim tanks. The wing housed weapon launching systems, which included four torpedo tubes for K-Vi torpedoes or anti-submarine homing torpedoes, as well as devices for dropping mines from the stern. The device also had two pairs of wheels, which allowed it to roll out onto the shore and descend into the water.

Masha was designed to work in different modes, namely: gliding movement through the water at speeds up to 50 knots, high-speed movement under water at a speed of 30 knots using Walter turbines and movement under water at a speed of 8 knots using electric motors. Until the end of the war, only a full-scale prototype of the Manta was built, designed for hydrodynamic tests.

Characteristics of the machine: crew - 2 people, length - 15 m, width - 6 m, maximum diameter of the middle hull - 1.5 m, displacement - 50 tons under water, maximum speed - 50 (on the surface) / 30 (under water)) knots, immersion depth - 50-60 m, range - 600 miles at a speed of 20 knots on the surface and 500 miles at a speed of 10 knots under water, power plant - two electric motors with a capacity of 590 hp each. With. (440 kW), 600 hp diesel generator. With. (447.6 kW), two Walter turbines with a capacity of 800 hp each. With. (597 kW), armament - two K-Vish torpedoes or eight anti-submarine homing torpedoes, eight TMA mines or twelve TMV mines or four missiles.

Type A

In 1933, the General Staff of the Japanese Navy adopted the concept of attacking enemy bases and anchorages with ultra-small submarines, which were to be delivered to the site of the operation by specialized ships or submarines. In the same year, Captain Kishimoto Kaneji developed a SMPL design capable of carrying two torpedoes. Under the veil of the strictest secrecy, in 1934, two experimental models of the SMPL were built at the Kure Navy shipyard, which were tested and refined, as a result of which a version appeared, in official documents

tah, which appeared as a "target boat" ("A-Hyoteki"). Two boats of this version, HA.1 and HAg2, were built in 1936, according to the test results, the project was finalized again, after which it was decided to launch mass production of boats under the designation “Ko-Hyoteki”. The construction of the first batch of 49 boats began in 1938, this batch included boats with numbers from HA.3 to HA. 52.

The converted Chiyoda and Chitose air transports, as well as Hei-Gata-class submarines, were used as SMPL carriers. When designing the SMPL, the main emphasis was placed on achieving high speed underwater by installing a powerful electric motor and good streamlining of the boat hull. As a result, the maximum speed of the Ko-Hyoteki under water reached 23 knots, it carried two 457-mm torpedoes as weapons, the torpedo tubes were placed in the bow one above the other.

During the development of the plan and preparation in 1941 of the Hawaii operation, Admiral Isoroku Yamamoto decided that a special submarine force would act in conjunction with carrier aircraft in the attack on Pearl Harbor. The crews of the boats were notified in mid-October 1941 of the specific purpose of the operation and concentrated on preparing for the attacks of Pearl Harbor and Singapore, while the large submarines of the 6th Submarine Fleet of the Japanese Navy were urgently modified into SMPL carriers. The high naval command still had doubts about the use of ultra-small submarines, but on November 14 the final decision on their use was made.

And already on November 18, 1941, a detachment of five carrier submarines, each of which carried one SMPL, fixed on the deck behind the conning tower, departed from the base in Kure to attack Pearl Harbor. These were boats 1-16, 1-18, 1-20, 1-22 and 1-24 from the 1st submarine division, the detachment received

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called "Special Attack Force". The task for each SMPL was to secretly enter the harbor, wait for the attack to begin, after which it was to attack the chosen target with torpedoes. After leaving the attack, the boats had to walk in a submerged position in a circle around one of the atolls near the island of Lanai, waiting for a meeting with their carrier submarines. On December 5, 1941, the detachment was already at a distance of 10 miles from the entrance to the harbor of Pearl Harbor.

The first SMPL was launched from [-16 at midnight. At 0116, boat 1-22 launched its SMPL with Lieutenant N. Iwasa, commander of the SMPL unit. At 2.15 SMPL released its PL 1-18, at 2.57 - 1-20, and the last SMPL (NA.19) - at 3.33 from PL 1-24. SMPL ON.!9 with K. Sakamaki and K. Inagaki immediately headed towards the lights of Honolulu.

When planning the operation, the Japanese command feared that the presence of underwater vehicles could betray Japanese intentions. However, the fears were in vain - for a long time the Americans did not understand the significance of the appearance of submarines near the defense zone of Pearl Harbor. The minesweeper Sopdog was the first to notice one of the SMPLs. At 03:42, about 2 miles south of the harbor entrance, the minesweeper discovered a periscope, of which he notified the destroyer Maga, who then unsuccessfully searched the indicated area until 04:45. The second sighting occurred an hour later. At 05.45 the crew of Apigage discovered a submarine following them, the conning tower of the submarine was above the water. A surveillance floatplane dropped smoke bombs near the submarine at 0633 hours, showing the destroyer Magi the location of the submarine. At 6:37 a.m., Maga cut across a boat that was apparently trying to break into the harbor. The captain of the destroyer Outerbridge after three minutes decided to attack the boat. Gun No. 1 opened fire at 6.45 and missed, gun No. 3 immediately opened fire, damaging the submarine at the junction of the conning tower with the shell. The boat tilted to starboard and slowly began to sink into the water. The destroyer bombarded her dive site with depth charges and ceased fire at 0646. The captain sent a message to the headquarters at 6.51: "We sank a submarine operating in the sea defense area with depth charges." The corrected message was sent two minutes later: "We attacked by firing and dropping depth charges on a submarine operating in the maritime defense area." At 0750, the first wave of Japanese aircraft reached Pearl Harbor and other military bases on Oahu.

At 0817, the destroyer Nejt spotted a submarine on the starboard side at the entrance to the canal. The boat went under water, but a minute later surfaced again. The destroyer fired on the boat, but it dived again and left. Meanwhile, inside the harbor, the minesweeper 7ape discovered another boat at 8.30. The minesweeper's message was received, and two minutes later the operational

the duty officer announced the alarm: "Japanese submarine in the harbor." Seaplane floating base Xi! $15 opened fire on a boat inside the harbor at 8:36 a.m., the submarine responded by firing a torpedo at the aircraft carrier, which passed by. The destroyer Mopagal went to the aid of the aircraft carrier at full speed, intending to ram the boat. As soon as the boat, damaged by fire from the aircraft carrier, floated to the surface, Mopargap hit it with a glancing blow, so the second torpedo passed below the destroyer and exploded on the shallows. Having dropped two depth charges, the destroyer completed the sinking of the SMPL.

Outside the harbor, other ships had numerous "contacts" with submarines. At 10.04 on the cruiser $. T osh 5 two torpedoes were fired, which passed by. Having determined the location of the boat, the crew of the cruiser opened fire and apparently sank it. Mage's destroyer between 1020 and 1150 had four separate "contacts". At 1715, Sazet dropped another target with depth charges. Meanwhile, aboard the Japanese carrier submarines, they were waiting for news from their comrades. At 10:41 p.m., boat 1-16 received a radio message from the SMPL commanded by Yokoyama: "Successful surprise attack." Based on this dubious evidence, the Japanese Navy concluded that at least three boats had penetrated

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harbor and after the air raid caused severe damage, including the destruction of the battleship. In the spring of 1942, reports of these submarine victories appeared in the Japanese press, despite the indignation of the Japanese pilots, who knew exactly when and under what circumstances the American ships were sunk.

Although the Japanese and German propaganda considered the submariners to be the "heroes of Pearl Harbor", the actual result of the attack for the Japanese was not happy. On the evening of December 7 and 8, carrier sub marinas were waiting near the island of Lanai, but the boats did not return. The last radio contact took place at 1.11 am on December 8, when the carrier [-16] received word from Boat Commander Yokoyama once again. By that time, the crew of Yokoyama and the crew of Sakamaki (HA.19) were probably the last living Japanese submariners who attacked the American base.

The fate of Sakamaki, the only survivor, became known after the war. Before the Sakamaki war, I will

chi was a cadet at a naval academy, learned to fly an airplane and learned navigation aboard a training ship, received special training in Chuyo Bay, which was very similar to the harbor of Pearl Harbor. He distinctly remembered his SMPL being lowered from a bracket on the aft deck of a carrier boat near Pearl Harbor in moonlight on the night of December 6th. He was then 23 years old. His mission was to coordinate the submarine attack with the aerial bombardment of Pearl Harbor. He was instructed to attack any ship - aircraft carriers, battleships and heavy cruisers. According to the instructions, after the attack, he was supposed to return to the waiting point for carrier boats. But he knew it was just a formality. All submariners were expected to die for their country. Sakamaki recalled: “I said goodbye to the captain of the carrier boat, and ten minutes later we were already sitting in our SMPLs. However, I was shocked to see that my gyro came out. building. There was no time for repairs. After consulting with the captain, I decided, one way or another, to try to go sailing.

. Without a gyrocompass, according to Sakamaki; his about. almost uncontrollable and unmaneuverable. “But I finally got to. Harbor entrance by 7 am. We were supposed to attack at 7.50. For the next three hours he patrolled around the harbor; simultaneously trying to repair the gyrocompass and trying to find the target. Several times he rose to the surface and then again went into the depths. He saw several small vessels - minesweepers and destroyers. tsev, but wanted to keep his torpedoes for a larger purpose. Through the periscope, he saw columns of smoke rising from the harbor. His boat hit the reefs several times. The water in the hold rose to the shelves of the battery, and poisonous fumes began to fill the submarine. The hull of the boat shuddered from the explosions of depth charges. Sakamaki and his crewmate Inagaki decided to try a do-. take to Lanai. During this attempt, the boat finally ran aground. The crew swam to shore, thinking that it was the island of Lanai. His friend drowned. After getting ashore, Sakamaki lost consciousness until an American patrol picked him up and took him to Oahu. Having come to himself, Sakamaki began to ask for the opportunity to die. noble

death, but the Americans only laughed at him. The crew members of the dead boats were subsequently canonized by the Japanese as saints. The fact that Sakamaki fell into the hands of the Americans was never mentioned by the Japanese.

Another massive use of SMPL took place on May 30-31, 1942 during the Japanese attack on Sydney. At about 4.20 am on May 30, 1942, a single-float biplane with navigation lights on flew over the anchorage of warships in Sydney harbor, twice passing the American cruiser Chicago, which was stationed at buoy No. 2, and departed soon to the east. The plane was heard and observed from Garden Island, and the officer on duty there, Lieutenant Wilson, was sent to the Chicago to ask what they knew about this aircraft.

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The watch officer from the Chicago replied that it was a plane from an American cruiser. Upon a second request, an answer was received that the aircraft was not American, since there were no other cruisers except the Chicago in the area. The air raid alert was announced at 5:07 am. Later reports spoke of the appearance of two unidentified aircraft in the Sydney-Newcastle area, but the search for fighter aircraft turned up nothing.

As it became known after the war, the aircraft observed near Sydney was launched from a Japanese submarine [-21. Piloted by Lieutenant Susumo Ito, it took off in increasing winds from a position 35 miles (68.85 km) northeast of Sydney at 3 am on 30 May. Ito flew into the harbor at an altitude of about 600 m (clouds did not allow higher), found the Chicago and four destroyers at the anchorage, and then flew off to board the water next to the boat [-21. The sea at that time was very rough, so during the landing the plane capsized and drowned, but Ito and his observer swam to the submarine and reported the ships in the harbor. Boat commander Sasaki decided

Attack

.tavan by midget submarines on the night of May 31st.

At sunset on Sunday, May 31, 1942, five Japanese submarines reached the New South Wales coast near Sydney. The Japanese support submarines 1-22, 1-24 and 1-27 launched the SLMS about 12 kilometers east of Sydney. Carrier submarines as a distraction. maneuver fired from cannons eastern front

revenge on Sydney, causing minimal damage. Attack on the harbor of Sydney, in which there were American ships: Stsavo, Perkips, Robbsh; Australian ships: the minelayer Whipgagee, the Canberra, and the armed merchant cruisers Kapitya and U!eichgaya, etc., supported the other two boats, 1-21 and 1-29.

The target was fixed on the locator screen at 20.00. It was SMPL No. 14 from the carrier boat 1-27, but at that time, due to heavy traffic inside the harbor, this was not given any importance. Approximately fifteen minutes later, the observer spotted a suspicious object caught in an anti-torpedo net near the western exit of the harbor. The message was transmitted to the Yaggoth ship at approximately 21:30. The premonition that the object was a magnetic mine kept Captain Yaggot from approaching it closely. The ship reported a suspicious object on the net at 21:52, and was ordered to get as close as possible to the object and give a full description of it. The survey showed that the object was a submarine, and at 22.30 a message was transmitted to the headquarters: “The object is underwater. Request for permission to open fire." Five minutes later, the SMPL crew set off explosive charges, destroying themselves along with the craft. In the meantime, at 21.48 the locator recorded another unidentified object, and again there was no decision from the command to take action. It was a SMPL from a submarine [-24.

Finally, at 22.27, a general alarm was announced. All ships in Sydney harbor were ordered to take precautionary measures against attack by submarines, and the exit from the harbor was closed. At 22.50, Sysaro, who was at buoy No. 2, noticed the submarine's periscope at a distance of 500 yards (457.2 m). He illuminated the place with searchlights and opened fire with tracer rounds. The submarine, heading for the harbor bridge, passed approximately 200 yards (183.9 m) from Garden Island and was nearly collided by the boat Mezgog, which had to change course to avoid the collision. An observer on the island's wharf saw the boat moving in the light of the Chicago's searchlights, splashing around her from the cruiser's shells.

At the same time, SMPL No. 21 from carrier 1-22 entered the harbor, and the locator did not detect it. However, at 22.52 the Gampapa auxiliary vessel, which was on duty in the area together

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those from Uapaga, found a breaker on the water ahead of them. The ship illuminated with its searchlight the cabin of the boat at a distance of about 20 m, but, being unarmed, it reported the appearance of an unknown boat to the base management and the commander of Yapaga. At 22.54 Uapaga discovered the conning tower of the submarine at a distance of 365 m from him. He tried to ram the boat, which soon appeared at a distance of 90 m from behind and began to slowly turn to the right. Contact was lost, but the boat was re-discovered at 550 m five minutes later, and at 23:07 Uapaga dropped six depth charges on her. The submarine didn't surface. At 23.14 a command was received: “All ships to put out
lights".

At 11:10 p.m. Seiopr fired at a suspicious object from his parking lot near Garden Island. It was probably the boat that turned to the north coast after the shelling from Stsago and there was preparing to take up position for a torpedo attack on the cruiser. And Oeezhopg, and who was next to him Y! VuaPa illuminated this place with spotlights, but the boat disappeared. At 11:25 p.m., the dry dock lights were turned off. Five minutes later, an underwater explosion damaged Kipash. Subsequently, it was determined that the explosion was caused by one of the two torpedoes fired at Sÿÿÿsavo by a submarine. At the same time, the torpedo passed under the Dutch submarine K9 and hit the bottom of the harbor near Kipabsh, where it exploded. Another torpedo ran ashore on Garden Island and failed to explode.

At this time, it was assumed that there was a third submarine in the harbor, because the locator spotted a new target at 1.58 am, but in subsequent analysis it turned out that it was a boat that fired torpedoes at the NSS and tried to leave the harbor. At 0300, another target was registered on the radar screen. It was possibly SMPL #21, which repaired the damage it had received from Uapaga four hours earlier. Watota and Sea Mÿÿÿ soon joined Seayu Nosh, until 8.27 am they bombarded this area of the harbor, suggesting the presence of a large number of Japanese submarines. But in fact, only the damaged boat No. 21 lay at the bottom of Taylor Bay. Divers found her lying on the bottom with the engine running the same day. Her team was found dead, the entire crew committed suicide, shot in the head with a revolver. Thus ended the Japanese SMPL raid on:

harbor of Sydney. In total, 60 type A boats were built before the end of the war (NA. 1 - NA.52, NA.54 - NA.61).

Characteristics type A (Ko-Nuoge): crew - 2 people, dimensions - 23.9 x 1.9 x 1.9 m, displacement - 46 tons under water, maximum speed - 19 knots on the surface, power plant - electric motor with a capacity of 600 l. With. (447.6 kW), range - 80 miles under water at 6 knots, armament. zhenie - two torpedoes.

Type B/type C = |

The first Japanese SMPLs had a short cruising range, determined by the capacity of the batteries - the boats did not have generators, and the batteries were recharged only on the carrier ship or at the base. To eliminate this shortcoming, in the autumn of 1942, the design of an improved version (type B) began, in which the experience of operating boats of the previous type was taken into account. At the beginning of 1943, the improved SMPL Na-53 was tested, after which a series of almost the same type of boats was built under the designation type C. The main difference from type A boats was the appearance of a diesel generator to charge batteries (complete recharging took 18 hours). Landing ships were used as carrier ships for type B and type C boats. In total, during the war, the Japanese built the following number of SMPLs: type B - 1 unit HA.53, type C - 15 units HA.62 - HA.76.

Characteristics type B and type C: crew - 3 people, dimensions - 24.9 x 1.91 x 1.9 m, displacement - 50 tons under water, maximum speed - 18.5 (on the surface) / b, 5 (under

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water) of the node, the power plant - an electric motor with a capacity of 600 liters. With. (447.6 kW) and a 40 hp diesel generator. With. (30 kW), cruising range - 120 miles at 4 knots, armament - two torpedoes.

R type

In December 1943, based on the SMPL type C, the Japanese began designing a larger boat type 0 (Koryu). The main changes compared to the type C boat were in the installation. more powerful diesel generator for acceleration

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battery charging process (reduced to eight hours), increased seaworthiness and improved living conditions for a crew of five. In addition, the hull became stronger, which increased the submersion depth of the boat to 100 m. Serial construction was launched in the spring of 1945, even before the end of the tests of the lead boat. It was planned to build 570 devices by September 1945, with a subsequent production rate of 180 devices per month. Despite the involvement of a large number of shipyards in the Koryu construction program, the navy could not keep up with the rate of delivery of the boats, and in August 1945, in various stages of construction. there were only 115 boats in the ranks, another 496 were on

On the basis of the Koryu SMPL, in 1944, a project was developed for the M-Kanamono underwater ultra-small minelayer, intended for laying mines near enemy bases. Instead of torpedo armament, he carried a mine tube containing 4 bottom mines. Only one boat of this type was built,

Characteristics type O: crew - 5 people, dimensions - 26.3 x 2 x 2 m, displacement - 59 tons under water, maximum speed - 16 (on the surface) / 8 (under water) knots, power plant - 500 hp electric motor (373 kW) and a 150 hp diesel generator. With. (112 kW), cruising range - 125 miles at 2.5 knots, armament - two torpedoes.

Characteristics of the M-Kanamono type: dimensions - 25 x 1.9 x 1.9 m, displacement - about 50 tons under water, armament - four mines.

Type "Kairyu"

Along with SMPL type A, type B, type C and type [0] at the end of the war, the Japanese built smaller boats called "Kairyu", a characteristic feature of which were onboard "fins" rudders in the middle part of the hull. Initially, the boat's armament consisted of two torpedoes, but the shortage of torpedoes led to the emergence of a version of the boat with a 600-kg explosive charge in the bow, which turned the boat into a suicide weapon. The serial construction of the Kairyu boats began in February 1945, in total, by September 1945, it was supposed to deliver 760 vehicles

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of this type, however, by August only 213 devices had been built, and another 207 were under construction.

Teal "Kairyu": crew - 2 people, dimensions - 17.3 x "3.5 x 1.3 m, displacement - 19.3 tons under water, maximum speed - 7.5 (on the surface) / 10 (under water) of the unit, the power plant is a gasoline engine with a capacity of 85 hp. With. (63.4 kW) and an 80 hp electric motor. With. (60 kW), cruising range - 36 miles at 3 knots, armament - two torpedoes or a 600-kg explosive charge. |

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As mentioned above, since the mid-30s. in Italy, work was underway to create special weapons to deal with the stronger fleets of England and France. These weapons included, in particular, motor boats and boats filled with explosives. A whole range of these small-sized assault weapons (MTM, MT$M, MTZUMA, etc.) were used by the Italians during the war. From the middle | software wars, good fighting. the Germans began to use the means (ze, Zeÿ ep I, zeÿ ep P, etc.), the Japanese at the end of the war used “Sine” exploding boats in large numbers for. suicidal attacks on, ships, allies.

Italian boats and motor boats

In 1935, the idea of attacking enemy naval bases with small boats carrying an explosive charge arose. The boats were supposed to be delivered to the area of the planned operation by flying boats 5.55, after which the boats unloaded on the water rushed to attack. When 50–100 m were left to the target, the driver left the boat, and the boat continued to move towards the target on its own, colliding with it and exploding. Tests of boat prototypes were carried out at sea. officers Giorgis and Margottini, but after a while the project was suspended ..

At the end of 1938, the naval ministry ordered the construction. 6 prototypes of small-sized exploding media;.

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stva. After numerous tests, the boats were officially given the designation MTM (Mossago da Togisto Mosayu - a modified tourist boat), they were also called Vags sho, they entered the service of the Italian Navy. The Barkino was a wooden motorboat equipped with explosives weighing 300-330 kg. The boat was steered by the driver, who was placed at the stern in a special seat, which, when the driver ejected, was thrown back and automatically unfolded on the water like a life raft. On top of the bow of the boat, there was a tubular frame of the percussion mechanism (raŀtoÿa), which, when it collided with the target, activated the fuse, which broke the boat into pieces.

two

- parts. The bow of the boat with an explosive charge went under water, at a depth of several meters under water, the detonator undermined the charge.

The production of MTM boats was launched in 1940-1942, in total 50 copies were built. MTM was modified in 1942-1943. in MTV (reduced tourist boat) and MTEM (reduced modified tourist boat), which were made by about 20 copies. Then the MTSM (modified tourist torpedo boat) was developed, which had more powerful weapons and two crew members. In 1943, the 60th largest MTZMA model was adopted (Moyussayu da Tiizto ZPagashche Moa! Yasayu Apagraio - a modified extended tourist torpedo boat). The boat of this version had an increased displacement, the number of engines increased to two, the crew consisted of two people, located in one cabin.

The combat use of exploding boats began in 1941. On the night of March 25-26, 1941, six MTMs were delivered on two patrol boats to the island of Crete, and at dawn two boats sank the English cruiser Watk and one boat, the tanker Repsesez. All boat drivers survived and were picked up by rescue teams.

The most famous operation with the use of exploding boats was the Italian attack on the British naval base in Grand Harbor (Malta). The entrance to the harbor was closed from submarines with a chain and nets, in shallow water there was a powerful steel grate. Commander of the 10th Flotilla

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of the Italian Navy, Captain Moccagatta personally took part in three reconnaissance sorties in order to check the conditions for entering the harbor, the protection system and the possibility of approaching undetected. The reconnaissance was carried out on 25 mana and on June 26, 1941, while the attack itself was scheduled for June 28. In the last reconnaissance, Mokkagatta managed to approach within 2 miles of the bay and reported that he could distinguish buildings in the light of the searchlights that were turned on during the air raid. raid. -

The technical side of the planned operation was provided by Major T. Tezei. Events were to develop as follows. Slop "Diana" under the command of Lieutenant Mario di Muro carries on board 9 exploding MTM boats and tows the MTT boat, which, in turn, carries two 5G.S. One of the 5G.S (the crew of Tesei-Pedretti) was to approach the harbor unnoticed and destroy the nets hanging from the bridge near the pier and blocking the entrance to the harbor. The second 5G.S (crew of the Costa-Barla) was supposed to undermine the submarines stationed in the neighboring bay. After opening the entrance to the main harbor, the exploding MTM boats should go on the attack with the aim of colliding with any ship that comes across. The surviving drivers of the MTM boats were to be picked up by a special torpedo boat, which was to be delivered to the attack site by motor boats MTI No. 451 and No. 452.

Heavy seas forced the flotilla to abandon the attack on June 28, the second attempt on the night of June 30 was also interrupted due to weather conditions. A new date for the attack was set - the night of July 26th. When the flotilla left Augusta, the weather favored the attack: there was no moon, the sea was calm. The sloop "Diana" arrived at the site of the operation exactly on schedule - at 11 pm. 20 miles from Malta, the MTM boats were unloaded, and the Diana turned home. However, when the boats were being unloaded from the Diana, the tow rope got tangled on the propeller of the engine of one of the boats, causing it to collide with the Diana. Since the boat also received damage to the bow, it was decided to abandon it. At 2 o'clock in the morning, the MTM boats approached a distance of 1000 m to the bridge, the engines were turned off, and the 51.C human-controlled torpedoes were launched and sent on a mission. It was 3 am, the saboteurs were already behind schedule.

After launching the second torpedo 51. received a 20-degree trim to the stern. The pumps were unable to correct this defect, and Theseei ordered Costa, the commander of the damaged torpedo, to return, and he himself went to the pier at 3.35, knowing that the attack should begin at 4.30. It was at this time that a bombing raid on the Mqabba airfield was planned to divert attention from the harbor. Going to the pier, Tezei said to Kostya: “At 4.30 the net must be blown up, and it will be blown up. Since it's too late, I'll set the fuse timer to one minute." Costa knew that Theseus would destroy himself to ensure the successful destruction of the network.

However, the Italians did not know that "Diana" at 22.30 spotted the radar of the British. The last radar contact was at 11 p.m., when the Diana was already moving away from Malta, although the small boats were invisible on the radar screen. Nevertheless, the defense of the harbor and the fortress was brought to full combat readiness.

A diverting air raid began a little earlier, and, hearing the first explosion of an aerial bomb at 4.25, the Italians assumed that this was the explosion of Theseus's charge. Therefore, Bosio, on the boat MTM No. 1, gave the order to all boats to attack. Frasetto on boat number 2 headed for the bridge, at 100 mot of the target turned on the fuse timer and rushed into the water, the boat hit the net, but there was no explosion. Then, using a torch, Frasetto showed other boats the direction to the bridge. Carabelli aimed his boat at the pier but did not have enough time to escape and was killed when his boat exploded, hitting the pier at 4:45. The force of the explosion was so great that the support collapsed, and the span of the steel bridge collapsed, blocking the entrance to the harbor. Frasetto, still in the water, tried to signal to other boats, but at that time the boat MTM No. 6 from Follieri hit the bridge and exploded nearby, and Frasetto lost consciousness.

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The English sergeant Zammit, who was guarding the fort at that time and watching the pier and the entrance to the harbor, described these events as follows: “Suddenly I heard the sound of boats and, although it was not yet dawn, I saw a small boat 270 meters from the bridge. Then I raised the alarm, and my gun started working as soon as the boat hit the bridge and exploded. Searchlights illuminated the space of the harbor for hundreds of meters from the bridge, I saw another small apparatus, aimed the gun

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on it and blew it up with the first two shots. Then I took aim at a third boat moving in the distance, and from the very first shots I destroyed it, I saw three other boats moving towards the harbor, all the guns fired at them, one was destroyed and two disabled. A quarter of an hour later I saw two small suspicious objects at a distance of about 1800 m, aimed the gun. on one of them and after 10-15 seconds opened fire. After a couple of seconds, all the other guns entered the battle, at which point the boats began to zigzag to avoid heavy damage.

Marchisio in MTM No. 4 was wounded and thrown into the sea. MTM No. 7, which attempted several times to break into the harbor, was eventually deliberately sunk by its driver. Zaniboni did the same with his boat MTM No. 8. Bosio, the injured driver of MTM No. 1, set the timer and prepared to leave the boat, but the explosion occurred before he could do so. Capriotti in MTM No. 9, dodging searchlights, tried to re-break into the harbor, but his boat was hit, then he jumped into the sea, swam to the wounded Marchisio and dragged him to the nearest buoy.

The crew of Costa failed to repair their device, so-. mu they stopped trying to penetrate the bay with submarines. Watching the unsuccessful attack, the crew after that spent another five hours in the water and finally reached the shore, where they were taken prisoner. Subsequently, their sunken torpedo was discovered. by the British in shallow water and raised to the surface. The radar warning alerted Nigisape PS aircraft of RAF 126, 185 and 251 Squadrons and as soon as dawn broke they took off, Motor Boats MT No. 451 and No. 452 turned back when they realized that the attack had been unsuccessful. About an hour later, when it was already quite light, the fighters found the boats and began to storm them. Although boat No. 451 managed to shoot down one Nitisapa, the boat's fuel tanks were still blown up, the crew only had time to jump overboard before the boat exploded, killing four sailors. The surviving Italian sailors were captured by the British and imprisoned. Heavily damaged boat No. 452 with the dead. the crew was captured earlier. +:

Only 11 people survived. As a result of the operation, they are: on. torpedo boat managed to get out of the shelling of aircraft:

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and catch up with Diana. The result of the operation on the part of the Italians: 5 people died, including Captain Mokkagatta, and 18 were taken prisoner, 2 motor boats, 8 exploding boats, 1 MTG boat, 2 man-controlled torpedoes and 2 fighters were lost, flying towards the British plane there. Undoubtedly, the ignorance of the Italians about the presence of early warning radar in the area was one of the main reasons for the failure of the operation. Despite this, the courage of the Italians was noted by the Lieutenant Governor of Malta, Sir Edward Jackson, in an article in the Daily Mirror on October 4, 1941.

In May 1942, five MTMs were deployed in the Black Sea, but they had little success until their return to Italy in March 1943. Between August and September 1942, MTMs operated in North African waters, but again without significant results. After the capitulation of Italy, the production of MTM continued in the pro-fascist B $] (Veribrisa Sostaje NaPapa), several dozen boats were built and handed over to the German fleet.

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MTM carried out attacks on allied ships in Naples and Anzio, but the most successful attack ended in heavy damage to the French guard Ttotre in mid-April 1945.

Characteristics of MTM: crew - 1 person, length - 6.15 m, width - 1.7 m, height - 0.45 m, displacement - 1.2 tons, engine - ANoa Koteo 6C 2500 with a capacity of 90 liters. With. (67 kW), maximum speed - 33 knots, cruising range - 85 miles at 31 knots, charge weight - 330 kg.

Characteristics of MT $ MA: crew - 2 people, length - 8.8 m, width - 2.32 m, height - 0.7 m, displacement - 3.7 tons, engine - two Teon Egazein with a capacity of 95 liters each. With. (71 kW), maximum speed - 28 knots, cruising range - 200 miles at 28 knots, armament - one 450-mm torpedo or two mines of 70 kg each.

German boats

The special means of combat that the German Navy prepared against the allied invasion forces in Europe also included exploding boats and motor boats (Srtepegooje). They were built at numerous shipyards in Germany and in the countries occupied by the Germans:

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Small hydrofoil boats

These small assault weapons attacked the enemy in formations of three boats each. The control boat ({Kottapaofos{e) with a flight commander and two operators moved a short distance behind two assault boats, each of which had one helmsman and explosives on board. When boats with explosives approached the target at the right distance, their helmsmen, switching control from manual to remote, were thrown overboard. Further guidance of the springboat on the target was carried out by operators from the control boat using VHF transmitters, after which the control boat picked up the helmsmen from the water. To improve the accuracy of remote control on assault boats, signal lights were installed on racks - green high on the bow, red low on the stern. The lights, visible only from the stern, were turned on by the helmsman just before jumping into the water. A metal frame was mounted on springs around the bow of the boat. When this frame was pressed, it undermined the bow of the boat and triggered the fuse mechanism of the main charge located in the stern. After a delay of two to seven seconds, when the boat had already managed to lie on the bottom near or directly under the bottom of the target, the main charge exploded like a bottom mine, causing the attacked ship the maximum possible damage.

The VHF transmitter of the remote control system carried out the following commands:

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- rudder right

- left hand drive

- stop,

- engine starting,

- small forward

— FULL move,

- undermining the charge.

The most common motor boats were partially converted sports boats 5.2 m long and 1.9 m wide. They were equipped with a gasoline engine, such as a motor

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AÿNa-Koteo, which allowed speeds up to 32 knots. While overcoming anti-submarine nets, ropes or chains, the outboard motor rose above the water. When fully loaded, the boat could sail for 5 hours.

The basis of the springboats were exploding boats of the type Jipse ("Lentil"). These boats were 5.75 long and 1.75 m wide, with a displacement of 1.8 tons. As a rule, a 3.9-liter Roga-M8 engine was used as a power plant, the maximum speed was from 33 to 35 knots. An explosive charge weighing approximately 400 kg was located below in the stern
parts of the boat.

Ships Ships were originally developed for the Abwehr (military intelligence) and were used in the Vgapdeprigv sabotage regiment. The first use of boats during the attack on the bridge at Anzio in April 1944 was unsuccessful. After some time, it was decided to transfer the remaining 30 boats to the fleet, they were assigned to the units of small combat weapons of K-Uegbap. During two combat operations on August 2 and August 7, 1944 against the allied forces off the coast of France, 16 lense assault units from the K-211 flotilla sank 12 enemy ships with a total displacement of 43,000 tons. In August, as part of K-Uegrap there were already 144 boats, another 281 boats were built during September. In September 1944, a program was adopted to build 1,000 radio-controlled boats and 200 wire-guided boats. During operation, the Kriegsmarine experts came to the conclusion that the boats of the first series, built from light spruce, are not very suitable for use on the high seas, so boats of an improved and reinforced version were later built. Creation plans

the Meweg torpedo driver rescue version and the smoke screen version were rejected because the boats were too dangerous to operate and suffered heavy losses.

Another type of springboat was a 5eÿi en (“Sled”) flat glider, 7.5 m long, equipped with an 80-hp VMM engine. With. and run by one person. In the nose of the glider there was a container with 300 kg of high explosive. The cruising range was 300 miles, the glider could reach a maximum speed of up to 25 knots. At the beginning of 1945, the second version of the boat 5ÿÿ - {ep P was developed, 8.5 m long, equipped with a VMÿ aircraft engine with a capacity of 600 liters. With. and capable of carrying two torpedoes in the bottom recesses. A more powerful engine made it possible to increase the maximum speed to 48 knots, the cruising range was 300 miles. The crew consisted of two people.

The most exotic were two projects of boats - Seedgashye ("Sea Dragon") and Togpayo. The Seedgasse was a catamaran based on the speed boats Nuiga (“Hydra”), equipped with an aviation turbojet to 0048. Armed with two torpedoes, it could develop a maximum speed of 60 knots. The exploding boat "Gornado" was also a catamaran of two floats of a hydroplane ÿi 52.

the installation was a deck-mounted pulsating jet engine Az 014, originally developed for the E! 103 (V-1). With this engine, the Tornado could supposedly reach a top speed of 46 knots (90 km/h) in good weather and smooth seas. The prototype "Tornado" carried a 700-kg explosive charge in the bow. ·

Ships, submarines, transport planes and cargo gliders were used to deliver the assault boats to the place of the operation. So, for example, during the preparation in 1944 of the operation against the British naval base in Scapa Flow, it was supposed to use

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The already mentioned So 242C-1 gliders, some of which were supposed to carry two boats in the cargo compartment - one Nudga-type assault boat and one command boat. A 1000-kg explosive charge was installed in the middle of the boat, the driver was located at the back. The overall dimensions of the assault boat are 13.2 x 3.1 x 1.88 m, the maximum speed is up to 36 knots. In total, before the end of the war, the Kgazeguet company in Warnemünde managed to build 39 copies of Nuag.

At the end of the war, a hydrofoil assault boat project was developed. These boats, which received the designation TE-5ÿ, were supposed to have two atom 004 or He$ 011 aircraft turbojets, which gave a large increase in speed at the final stage of the attack. , Production. TK-56 plani-. rushed to the beginning. 1945 t ... but it never happened. deployed. at

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"Blue"

One of the weapons developed by Japan in its latest effort to avert defeat was the Sinyo suicide boat. She was a motor boat equipped with a powerful explosive charge or two depth charges in the bow. The idea was that the pilot would set a course to attack a chosen target, remove the fuse from the fuse, and then hold the course until the boat collided with the ship. The weight of the explosives was enough to sink a medium-sized ship. By the end of the war, approximately 6,000 Sine boats were built for use in Okinawa and Japan, but, as far as is known, they did not cause much damage to the Allied fleet: 6 ships were damaged off the Philippines, and 3 ships off Okinawa.

Option "Blue" (zarad aft)

The boat weighed about 1.5-2 tons, measured from 4.9 m to 5.5 m in length and was capable of speeds from 25 to 30 knots using one or two car engines. Each boat at the stern had two flare guns. They were believed to be used as tracers so that Japanese gunners, firing at American ships, would not accidentally cover their boat.

12. CAIANS, BOATS AND CANOSIS

In July 1940, Lieutenant Roger Courtney, who served in Detachment No. 8 of the British Navy in Scotland, put forward the idea of \u200b\u200bexecuting sabotage and reconnaissance operations by canoe. The naval command was initially skeptical, but after a series of demonstrations during which Courtney approached the ships in canoes undetected and marked them with chalk, some members of the leadership changed their view of the problem. Courtney was promoted to captain and appointed commander of the Eoo! At the beginning of 1941, the Kobo detachment! was sent to Egypt to conduct operations in the Eastern Mediterranean. Their goal was the island of Rhodes, which was in the hands of the Italians, and Courtney's first task was to find suitable landing sites. However, the operation to capture Rhodes was canceled, and the detachment was assigned to the submariners, for whom it became the core of unit 585 (Spesta! Boa! Sescon).

One of the first operations of 585 took place at the end of June 1941. Two saboteurs from 585 were delivered on the submarine Ote from Malta to the coast of Sicily. Disembarking with the help of a canoe, they blew up the railway tunnel, after which they rowed back to the waiting submarine.

'boat. Bridges, railroads and aqueducts were the main targets in the early days. An equally important goal was to bring agents of various intelligence services over the front line and bring them back. Lance Corporal Bremner, for example, was presented with an award for

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the rescue of 200 Australian soldiers from Crete, whom he managed to transport to three submarines waiting for them. By the end of 1941

585 included about sixty combat swimmers and canoeists. For beginners 585 a seventeen-week training course was adopted, this course was accompanied by parapet training. They were considered a commando unit, so they wore green berets and the Sottapdo 8585 patch on the sleeve.

In November 1942, a small team led by Captain Godfrey Courtney (brother of Roger Courtney, then a major) landed American General Mark Clark in Algiers to negotiate with the French command on the eve of the invasion and took him back with his staff officers two days later. During the invasion itself, Force 585 directed landings at the Algerian berets. In this and in reconnaissance of beaches for landing, they were assisted by people from the hydrographic department of the Navy.

Less successful were attempts to attack enemy ships using miniature torpedoes launched manually from canoes. These torpedoes, about half a meter long, had an electric motor that set in motion coaxial counter-rotating propellers. An explosive charge weighing about 1 kg was located in the head of the torpedo, the range of these torpedoes was approximately 400 m. It was supposed to equip each kayak with four torpedoes.

On the night of September 6-7, 1942, about 2 kilometers from the entrance to the port of Crotone (Italy), the submarine OpbgoKen launched a kayak with Captain Wilson and bombardier Brittlebank. The kayak, having sneaked into the harbor, took up a position to launch its torpedoes from a distance of 100 m into the side of a rather large schooner, which was moored. The torpedoes were adjusted to a one and a half meter immersion and sent to the target, but the effect turned out to be virtually zero - the ship did not sink.

A small unit, called the 7th group, carried out raids on German airfields on the island of Crete, in Sicily and Sardinia, the airlift was carried out from aircraft and submarines. Raids in the Middle East began in October 1943, from 1944 the main area of operations of 585 turned out to be in the Pacific region, although small teams: served on British submarines around the world. Several operations were carried out on the German-occupied coasts of Norway and France, but they were not so successful.

us, as in the Mediterranean, due to local climatic conditions and the presence of a strong coast guard.

Soon the 7th group was transferred to Ceylon, and then to India. In Burma, in June 1944, the 2nd Troupe became part of Task Force 5006 (Zsha|Oreganops Otojr), which also included a marine unit known as Section 385, and a naval intelligence unit. The rivers and coastline of Burma provided many opportunities for these units to showcase their talents. More than eighty operations took place on the west coast alone, many of them using motorized diving canoes MC (Mogophead Sibmerge Canoe).

The driver was seated in the aft part of the MLT; in some modifications of the canoe, the driver's shoulders and head were under a plexiglass cap. For movement in the surface and underwater position, an electric motor was used, placed in a strong container. The dive and ascent of the canoe was carried out by filling and purging four tanks, the tanks were purged from an air system, which included two cylinders with compressed air, valves and a pipeline. The canoe was equipped with a breathing system for the driver. The maneuvering of the boat on the water and under water was carried out using a vertical and go-

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horizontal rudders with manual drive. The M$S design had a number of drawbacks, the main of which was poor handling, the boat was submerged. She obeys. She accepted the driver's manipulations with some delay, for which she received the ironic unofficial name Severipe Veashu ("Sleeping Beauty"). The total number of Sleeping Beauties built during the war years was 160 copies. The MES had a length of 3.9 m, a width of 0.7 m, an immersion depth of up to 15 m, a speed of 3.5 knots, and a cruising range of up to 40 miles.

In 1941, the 55KR subunit (Zma[5cae Kaiape Rogse) was created, which was intended to carry out small raids in the interests of SOE. There were about sixty people in the 55KE, about half of them were officers from the special services or SOE. In addition to the British, THEM included Danes, French, Dutch, Poles, Czechs and Germans who served under English names. The first raids were carried out on the French coast, mainly. by using. torpedo. boats. Landing

was carried out on aoa eu folding boats, wooden motor boats and canoes. The targets were sabotage against lighthouses, observation posts, and Coast Guard posts, as well as the capture of German-tongues and the landing of SOE agents. Thirty volunteers were sent in August to Nigeria, where they prepared for Operation Roztazeg ("Postmaster"). The operation began in January 1942, its goal was to capture a German tanker and an Italian cargo ship in the harbor of the Spanish island of Fernando Po.

On July 6, 1942, the Marine Corps formed a special unit of the VRV (Voot Rato! Boaji) in its composition to attack enemy ships. with boats and canoes. The VRV had two groups: one equipped with exploding boats, the other used canoes. The first operation under the name EgapKup took place on December 7, 1942, when ten saboteurs in five canoes Sauce (“Mollusk”) MK P were launched from a submarine near the mouth of the Gironde River. Their mission was to get to Bordeaux and attack the German ships that were shipping to Japan. Only two canoes were able to enter the harbor on the night of 11/12 December and lay mines on four ships. One ship was sunk and the other three were badly damaged. As a result, all participants in the operation either died or were captured, with the exception of the commander of the Air Force, Major Hasler, and his canoe partner, sailor Sparks. These two, after the completion of the operation, reached Spain, and from there, in April 1943, they managed to get to England. In February 1944, eighteen men from the VRV were sent to the Middle East with several Soskje canoes. Their first operation, in mid-June, was an attack on German ships in Portolago Bay. Three canoes were launched from boats, they then penetrated the harbor, laying mines that sank three escort ships and damaged three destroyers. All participants in the operation escaped by meeting with the boats waiting for them.

In December 1942, a command of coastal reconnaissance and navigation of the assault forces CORR (Cottonea OregaNop$ Rpove Rachez) was created. In January of the following year, two groups were sent to the Mediterranean to reconnoiter the beaches of Sicily. Equipped with inadequate canoes and bulky rubber suits, both groups suffered heavy casualties in the operations; held in February and March. Admiral Lewis

Mountbatten, then head of Joint Special Operations, persuaded the Navy Chief of Staff to increase the priority of the SORR in providing special equipment and providing every support in their difficult, dangerous and vital task.

SORR groups usually landed at a distance of 5.5–7.5 km from the coastline from a submarine or torpedo boats.
ditch, after which the canoe with two crew members sailed to

shore at a distance of up to 180 m. From here, No. 1 (combat swimmer) swam, leaving No. 2 (rower) to cover the rear, while he himself carried out coastal reconnaissance. Intelligence was carried out both in the interests of the fleet and in the interests of the army. The sailors were interested in the approach to the shore, the type of stones or shallow water,

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minefields, currents, bank steepness, surf conditions and marker placement. The army team members were interested in the coast itself, its details - whether it could contribute to the defense or not, barriers, waste, marks, etc. Infra-red or other beacons were installed on the coast. During the landing, some members of the SORR teams marked the intended place with torches or infrared beacons from submarines and canoes, while other members helped the ships move towards the shore. CORR teams No. 5 and No. 6 were the first to complete their training and arrived in Algeria in April-May 1943 with new canoes, as well as new wetsuits and equipment. Their reconnaissance of the Sicilian coast was successful - in July they carried out a coast marking from a canoe. The teams then moved on to the coast of southern Italy, and soon there was a great demand for SORR. From the summer of 1943, their greatest achievement was the preparation for the invasion of Normandy. SORR Commander Clogstown-Wilmott personally led No. 1 Team. The teams landed with Type X SMPLs and landing craft fuel and lubricants. In addition, two teams provided landings in the Mediterranean at Anzio, and two more teams in the Far East. Along with the English group 588 there was a detachment of boatmen, consisting of Australians, who were delivered from the territory of Australia on high-speed vessels. For example, in September 1943, the Australians carried out a raid on the area of Singapore. There they, moving in their kayaks, mined several Japanese cargo ships. As a result of only one night operation in the port of Singapore, seven ships with a total displacement of 30,000 tons were sunk.

13. CARGO CARRIERS

English aircraft carriers

MYSELF

With the capture of the European coast by the Germans from the Northern Cape to the Spanish border, long-range aircraft of the Luftwaffe began to pose a serious threat to British convoys. Due to the shortage of naval aircraft in 1940, the British began to convert merchant ships into escort ships for sea convoys. Such vessels, called SAM (Saariy Ansgay Megshapitep), were equipped in the bow with a catapult to launch a fighter.

Initially, they formed a group of three merchant ships and an aircraft carrier of seaplanes Revasius, on which one fighter of the early series Nigisape or Eshtag was installed. This group, called ships with fighter catapults (E meg Saara 5-p5), proved the viability of the idea, and a program was soon begun to convert 50 merchant ships of various sizes into SAMs. All of them carried cargo and had civilian crews, but each ship had a catapult in the bow. As a serial escort fighter, Zea Nigisape MK [A (Sea Hurricane) or, as they were also called, Nitisai aircraft, which were a modification of serial Nigisape MK I (Hurricane) aircraft, were used.

The Nigisa fighter { was, in fact, a disposable manned aircraft. The pilots sat for hours in the cockpits of their fighters, waiting for the appearance of enemy aircraft. After taking off from the catapult, the fighter carried out the task of protecting the convoy of ships from attacks by German aircraft,
however

after completing the combat mission, he could not land on the deck of a catapult ship, because there was simply no place on it for this. For the pilot of a fighter aircraft, there was only one way out - to land the plane on the water as close as possible to their ships, and to leave the car with a parachute before landing. Rescue teams were provided to lift the pilot out of the water, and special teams were also created to lift the fighter if it remained afloat after splashing down. Fly Nigps fighters! it was dangerous, so the pilots for them were recruited from volunteers.

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The first attempt to use Niggisa to protect the convoy took place on May 27, 1941, the catapult ship CAM M!sVae] E accompanied the convoy. However, this attempt ended sadly - the catapult ship was attacked by a German submarine, after which sank with a fighter. Nevertheless, by the end of the first week of July, there were already 16 SAM ships in operation with 25 aircraft on board.

The first naval victory was won by the Nigps fighter! On August 2, 1941, when Lieutenant R. Everett intercepted and shot down a German Ru 200 bomber. After the interception, the pilot abandoned his fighter, and he himself was picked up by a rescue team from an English destroyer. During the winter months, ejection ships with Nitsa fighters! did not go to sea due to bad weather conditions, flights were not resumed until March 1942. In the spring of 1942, SAM ships were again used to protect trade convoys heading to the USSR.

Catapult aircraft carriers were used until the summer of 1943. During these two years (from May 1941 to August 1943), only eight aircraft launches were made from 35 SAM ships, during which the British shot down six and damaged two enemy aircraft, while three own fighters were lost, one own pilot was killed. Such a successful ratio clearly shows that the principle of the catapult aircraft carrier justified itself at that time. In addition, it must be borne in mind that even one sight of a fighter standing on a catapult, ready in case of an alarm to take off to intercept the enemy, provided moral support to the crews of transport ships. In total, 50 Nigisai fighters were trained during the use of catapult ships.

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MAC .

In addition to the SAM aircraft carriers, in 1942, the construction of MAS aircraft carriers (Megscap! Apstaÿ Carpeg - merchant aircraft carrier) began, which retained most of their carrying capacity in the presence of a flight deck on top. Their main purpose was to escort convoys. IAS, like CAM ships, sailed under the merchant flag, only their flight crew was part of the Royal Navy,

The first six aircraft carriers were converted from unfinished grain carriers with a 129 x 19 m flight deck and a small aft hangar that could accommodate four Swatai aircraft. From the point of view of cargo requirements and dimensions, tankers were also very suitable candidates for conversion, but the British Admiralty had serious doubts about the fire safety of these ships.

Nevertheless, nine tankers (which retained their names 5ÿÿÿ) and four more tankers of the Etriye Mas class were soon converted. An aircraft carrier tanker differed from a dry cargo aircraft carrier only in the absence of a hangar, so the aircraft remained on the flight deck all the time in any weather. Despite the urgency of the program, it was not until April 1943 that the first MAS entered service. All 19 cargo carriers survived the war, after which they were again converted into transport ships.

American aircraft carriers

Vodie

In the summer of 1941, US shipyards began converting 21 cargo ships into aircraft carriers. Of this number, 11 ships were handed over to the British Navy, where they received the designation of the escort aircraft carrier of the APaskeg 1 class, while the rest became part of the US Navy under the designation of the aircraft carrier of the Vogie class. These aircraft carriers had a hangar for 28 aircraft with two cargo lifts. The first three American aircraft carriers, Vogge (SUE.9), Cara (SUE) and Saute (CME.13), had two catapults each, they were launched in early 1942. Equipped with radars, they entered

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in the anti-submarine groups organized in the autumn of 1942. For example, before the end of the war, five anti-submarine groups with escort aircraft carriers CME sank about 35 German submarines in the Atlantic. With the end of the war in Europe, aircraft carriers were transferred to the Pacific Ocean, where they were engaged until the end of the war in the transportation of goods and weapons, as well as delivery to the United States
Japanese prisoners of war.

SAPDATOP

In the USA, the construction of escort aircraft carriers was given the highest priority in 1942, but the pace of their entry into service was limited by the number of ships available for conversion. Four newly built American tankers for the US Navy, Zapgatop (AUS .29, later SUE.26), Zashchee (CME. 29), Szepapro (SUE.28) and Simappee (CME. 27), were accepted in January 1942, reclassified as AUS (Aircus Escort Ves5e] 5 - escort aircraft carriers) and immediately. converted within six to eight months. The Zapgatop-class aircraft carriers were more successful than the earlier escort carriers because they were larger and faster. Two catapults were installed on them, although the second catapult was added only in 1944. All four aircraft carriers participated in the landing of allied forces in North Africa in October-November 1942, and then were transferred to the South Pacific. The aircraft carrier Zaschee, returned to the Atlantic in March 1943, operated south of the Azores and off the coast of Brazil as part of anti-submarine groups, and in February 1944 returned to the Pacific Ocean again. All four aircraft carriers took part in the battle near the bay of Leyte Island. On October 25, Zaschee was badly damaged by kamikaze attacks, after which he suffered a torpedo attack from the submarine 1-56, but survived. Then the kamikaze knocked out Zee\appee, losing the Zapratop. Despite all these attacks, all three aircraft carriers were in operation in the spring of 1945. Zapzatol was badly damaged by a kamikaze attack off Okinawa on May 4, 1945, but, like other aircraft carriers, was returned to service. Each Zapgatop-class aircraft carrier carried 12 fighters. E4E Utasat, 9 pikarovtsiks 581) Rush ezz and 9 torpedo bombers TVE Auepgeg.

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5 [about

The successful use of aircraft carriers-cargo carriers led to the emergence of new projects. So, for example, 50 vessels of the Cashamansa class (SUE.55-104) were accepted for conversion at the end of 1942. Although the flight deck was shortened (from 152.4 m to 32.9 m), there were two elevators and a catapult. In many respects, Sazabjaps' project was better than Zapratop's. In January 1943, the aircraft carrier Smart Wow (AUS.63) was laid down at the shipyard in Vancouver, but in April it was renamed M1amay and entered service under this name in October 1943. But then this name was assigned to a large aircraft carrier, so on September 15, 1944 SUE.63 became known as 51 about. The small aircraft carrier made two raids in the Pacific and supported amphibious landings at Saipan, Tinyan and Morotai. In October 1944, having on board 17 E4E USHASA fighters and 12 TBE Auepreg torpedo bombers, he became part of the Tayy Twee 1 group, which was part of the armada that took part in the Battle of Leyte Island. On the morning of October 25, 1944, the aircraft carrier was attacked by Japanese kamikaze aircraft and became the first American aircraft carrier to be sunk during their attacks.

Japanese aircraft carriers

"Yamashiro Maru" / "Shimane Maru"

In 1944, by order of the Japanese army command, the Yamashiro Maru aircraft carrier was built, based on a class 211 tanker. The aircraft carrier had a flight deck with overall dimensions of 125 x 23 m, a hangar for 8 aircraft one lift. In February 1945, she was sunk by American aircraft.

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In the same year, the Simanz Maru aircraft carrier, which was a modification of a more powerful GTG-class tanker, was put into service. The aircraft carrier had a flight deck, its overall dimensions were 155 x 23 m, a hangar for 12 aircraft and one lift. In July 1945, she was sunk by American aircraft.

"Zuiho"

Work on the conversion of the Takasaki submarine tanker into an aircraft carrier, which received the designation Zuiho, began in January 1940. Initially, the tanker was equipped with a flight deck, its overall dimensions were 180 x 23 m, in 1943 the deck was extended to 192, 6 m

A year later, the Zuiho, which could carry 30 aircraft, was sent to the Philippines as part of a group of ships; at the end of autumn, it already took part in hostilities. Then he returned to Japan for repairs, after which he took part in the Battle of Midway Island. In October 1942, a dive bomber from the American aircraft carrier Energetique dropped a bomb on the central part of the Zuiho flight deck, which formed a hole 15 m in diameter, which caused it to return to the base for repairs. In February 1944, the Zuiho took part in the battle in the Philippine Sea, when its planes carried out an attack on the American battleship Zosh Rakoga. In the battle near the bay of Leyte Island, the Zuiho was sunk by the Americans.

"Ryuho"

In 1941-1942. the floating base of submarines "Taigei" was converted into an aircraft carrier "Ryuho". The hangar of the aircraft carrier accommodated 31 aircraft, the flight deck measured 185 x 23 m. In December 1942 it was damaged by an American submarine, after which it was repaired until March 1943, while the length of the flight deck was increased to 198 m. In March 1945 The city was severely damaged by American carrier-based aircraft, a month later the aircraft carrier, which could not be restored, was withdrawn from the fleet.

"Soho"

The carrier tanker Soho entered service in January 1942 and could carry 30 aircraft. Having taken part in the battle in the Coral Sea, on May 7, 1942, it was subjected to a massive attack by American carrier-based aircraft, received hits by 7 torpedoes and 13 air bombs and mr: sank in 20 minutes.

14. Teletanks and Land Torpedoes

One of the first remotely controlled vehicles intended for combat use was developed in 1918 by the Englishman E. Wychersham, an engineer of the company SzhegrShag Tmatorg. This apparatus, called Tapa Togredo (“Land Torpedo”), was a carrier of an explosive charge. The engine of the device was powered by a battery, the control was carried out by cable. Although the apparatus had certain advantages in the defensive operations of the First World War, it never saw combat.

At the end of the 20s. in the USSR, work began on remotely controlled tanks (at that time they were called “telemechanical tanks” or “teletanks”). In February 1930, near Leningrad, the Renault ET-17 tank, equipped with the Reka-1 remote control system, was tested for the first time, a month later the T-18 tank passed similar tests. In 1932, a double-turreted T-26 tank was tested at the Moscow chemical test site, after which Teletank Detachment No. 4 was formed in the Leningrad Military District, which conducted several exercises the following year. During 1938-1939. work was underway to create a telemechanical tank TT-BT-7. On the eve of the Great Patriotic War, teletanks were manufactured on the basis of the T-38 line tank.

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The first work was carried out with tanks controlled from the ground using stationary consoles. After the basic principles of transmitting and receiving commands were worked out, the development of a variant with a mobile remote control located in the control tank began. This is how telemechanical groups appeared, which included a teletank (TT)

and a control tank (TU), in whose crew there was an operator who controlled the teletank with the help of a remote control within a radius of up to one and a half kilometers. Control operators were trained in Ulyanovsk.

Remote controlled tanks TT-26 took part in the Soviet-Finnish war of 1939-1940. and in the fighting at the beginning of the Great Patriotic War. The teletanks were equipped with machine guns, flamethrowers, or special delayed-action mines, which the tank dropped near the enemy fortifications, which made it possible to destroy bunkers up to four levels underground. Teletanks were also adapted to the use of chemical weapons, but they were not used in combat.

At the end of August 1941 in the Soviet Union under the leadership of A.P. Kazantsev and A.G. Iosifyan, work began on the production of "land electric torpedoes" - small self-propelled tankettes controlled by wires. They were designed to blow up German tanks in street fighting, as well as to fight enemy infantry by using flamethrowers.

The development of remote-controlled vehicles towing explosive charges was carried out in Germany in 1939-1940. The Vogrmag firm built a small batch of remote-controlled tracked vehicles V T, which were used to clear the fields during the battle for France in May 1940. In October 1941, the Vogemag firm began to develop a heavy vehicle V GU, serial production which began in 1943. Since April 1942, units of the Wehrmacht began to use light charge carriers CoPiag in two versions, and in 1944 - a medium charge carrier called Zrppreg.

Experimental charge carriers with remote control were also developed before the war in France, in England, and at the end of the Second World War in Japan and in the USA. |

TT-18

The first tests of the teletank, created on the basis of the T-18 (MS-1) light tank and equipped with the Most-1 remote control radio equipment, began on March 23, 1930:

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During the tests, the tank, moving at a speed of 2.5-4 km / h, confidently followed the operator's commands (right-left-stop) and demonstrated the fundamental correctness of the idea of controlling the tank by radio.

According to the results of tests carried out in 1933, some changes were made to the design of the tank: all regular controls were removed from the vehicle, and a new 16-command control equipment was placed in the driver's seat. An experimental batch of teletanks was made, five vehicles from this batch were transferred on January 8, 1933 for testing to special detachment No. 4, which was part of the Leningrad Military District. According to the test results, the tank was given the designation TT-18. In October 1934, comparative tests of the TT-18, TT-26 and TT-27 tanks were carried out in order to select the type of teletank to be put into production. It turned out that with good cross-country ability and ease of execution of the TT-18 commands due to its low weight and

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of relatively narrow gauge with a high silhouette, it practically could not move steadily in a straight direction, since it was constantly turned away from shocks on potholes. As a result, the TT-26 tank was recommended for serial production. A

Characteristics of TT-18: weight - 5.41 tons, length - 3.5 m, width - 1.76 m, height - 2.12 m, maximum speed according to

highway — 16 km/h, cruising range along the highway — 50 km, armor thickness — 16 mm.

Characteristics of the TT-27: weight - 2.65 tons, length - 2.59 m, width - 1.83 m, height - 1.45 m, maximum speed on the highway - 42 km/h, cruising range on the highway - 120 km, armor thickness - 10 mm.

TT-BT-7

During 1938-1939. In the Soviet Union, work was underway to create a TT-BT-7 teletank based on the BT-7 tank, intended for reconnaissance of minefields, making passages in wire obstacles, flamethrowing, laying smoke screens, degassing or contaminating the area with military poisons substances. It was armed with a 7.62-mm Silin radio-controlled machine gun and KS-60 chemical equipment.

The equipment of the teletank ensured the execution of 17 commands transmitted from the control tank by radio: starting the engine, stopping the vehicle, turning left and right, firing a machine gun, throwing flames, placing a smoke screen, etc. The control radio channel was protected from false commands and interference, its maximum range was about 4000 m, the duration of continuous control was up to 6 hours.

The teletank TT-BT-7 could be used as a chemical tank with manual control, and its control tank TU-BT-7 could be used as a line tank with artillery armament. Tests carried out in 1940 showed that, compared with the TT-26 teletanks, the TT BT-7 teletanks had superior mobility and were simpler and more reliable in remote control at a distance of up to 1000 m. However, aimed shooting: the teletank was impossible, and area shooting is ineffective. Further work on the TT-BT-7 teletanks was stopped with the beginning of the Great Patriotic War.

Characteristics of TT-BT-7: weight - 13 tons, length - 5.66 m, width - 2.23 m, height - 2.42 m, maximum speed on the highway - 53 km/h, cruising range on the highway - 375 km, armor thickness - 13 mm (hull forehead) and 15 mm (turret forehead).

TT-26

In the spring of 1932, the T-26 double-turret tank was tested, equipped with the Most-1 remote control equipment, and later, the River-1 and River-2. Based on the test results, an experimental batch of four TT-26 teletanks and two TU-26 control tanks was ordered. Already in the summer of this year, prototypes of the TT-26 participated in comparative tests of teletanks of various types on the basis of special tank detachment No. 4. Based on the results of the tests, an order was issued for the manufacture of 33 telemechanical groups (the telemechanical group is a teletank and a control tank).

By the fall of 1936, telemechanical groups began to enter the heavy tank brigades of the High Command reserve. They were supposed to be used for reconnaissance of minefields, anti-tank obstacles and the construction of passages in them, the destruction of pillboxes, flamethrowing and smoke screens, as well as for removing crews from wrecked tanks. The following year, the 21st and 152nd tank battalions were armed with 28 telemechanical groups.

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The teletanks of these groups were equipped with flamethrowers and DT machine guns. Outwardly, the teletanks differed from serial tanks by the presence of two armored cups on the roof of the tower, which protected the pins of the whip antennas and their isolation from destruction when they came under fire from small arms.

In February 1940, during the Soviet-Finnish war, a single-turret modification of the TT-26 teletank was used, which had reinforced armor and a specially made undercarriage. In front of the TT-26 hull, a device was mounted for transporting, dropping and undermining special boxes protected by 30-mm armor, with an explosive charge weighing from 300 to 700 kg. After the box was delivered to the target, the radio team activated the box release mechanism. From hitting the ground, the explosive was switched on with a delay of 15 minutes, during which time the teletank in reverse had to move to a safe distance. The main task of these teletanks was to break through fortified lines of defense, such as the Mannerheim Line.

During the tests, a 300-kg charge dropped onto a line of five rows of gouges completely destroyed them, making a passage 8 m wide.

However, the combat use of telemechanical groups showed that it is difficult to accurately target teletanks in the rugged wooded terrain of the Karelian Isthmus and the presence of powerful anti-tank barriers. For example, on February 14–18, a teletank battalion (the 217th separate tank battalion) was used to open a system of minefields, losing 4 vehicles from mines. Losses of teletanks over the entire period of the fighting amounted to 42 vehicles, of which 6 were beyond repair, 21 were sent to the capital. repairs and 15 restored in the battalion.

Here is a shorthand extract from the report of brigade commander Yermakov at a meeting of the commanding staff, held at the Central Committee of the All-Union Communist Party (6) on April 17, 1940 and dedicated to the experience of military operations in the Soviet-Finnish war: “... Comrades, it must be said, that we used teletanks, but the conditions did not allow them to be used on a wider scale. Teletanks helped us, especially during the explosion of pillboxes No. 39 and No. 35. These pillboxes were the most terrible, but they were blown up. ... the tanks worked well, they justified themselves, but we were not always able to use them due to the presence of a large number of craters on the ground. Nevertheless, despite this, we used them. In any case, the tanks justified themselves. A total of 55 copies of the T-26 telemechanical groups were built.

Characteristics of the TT-26: weight - 10.25 tons, length - 4.62 m, width - 2.45 m, height - 2.33 m, maximum speed on the highway - 30 km/h, cruising range on the highway - 240 km, armor thickness - 15 mm (hull forehead) and 15 mm (turret forehead).

11-38 · The T-38 amphibious tank was developed in 1935 to replace its predecessor, the T-37. Serial production was carried out from 1936 to 1939, during which time about 1300 copies were produced. The use of a tank in combat conditions during the Soviet-Finnish war of 1939-1940. revealed a number of its shortcomings.

The armor of the tank was very light, it could be pierced even with a machine gun, for this reason they suffered heavy losses. Attempts to develop a modification of the tank with additional armor on the basis of the existing production of the T-38 did not

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T-37

were crowned with particular success, as a result, the modification turned out to be little better than the original, and the project was discontinued. Then they turned to the idea of using the T-38 as a teletank equipped with an explosive charge for operations against bunkers, bridges or other stationary fields. In 1941, several copies of the T-38 were modified into teletanks, but there is no evidence of their successful use in combat operations.

Characteristics of the TT-38: weight - 3.3 tons, length - 3.78 m, width - 2.33 m, height - 1.63 m, maximum speed on the highway - 40 km/h, cruising range on the highway - 230 km, armor thickness - 8 mm (hull forehead) and 6 mm (stern).

wuvie

The German army, having conquered Poland, was faced with the need to quickly clear passages in minefields. The high command of the army leaned in favor of the use of a remote control vehicle. In November 1939, the Vogezhaga firm received an assignment to develop a remote-controlled tracked vehicle.

The first model of the machine was created by the time of the battle for France in May 1940. It was for the KE 300 Mtelgaitumawep, of which 50 copies were built from 1939 to May 1940. The machine, which received the designation B I at the company, weighed 1.5 tons, was equipped with a 4-cylinder engine with a volume of 1.5 or 29 liters. with., the speed of movement was 5 km / h.

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The operator directed the tankette to the area that was to be cleared. Having reached a predetermined point, the device dropped the explosive charge, activating the delayed action fuse, and left from there. However, the deceleration device often failed, leading to the destruction of the carrier apparatus by a premature explosion.

In April 1940, a new version was ordered under the designation V P. It was a more advanced device, weighing 2.3 tons, equipped with a 6-cylinder engine of 2.25 liters with a capacity of 49 hp. With. The production of a batch of 100 copies of the VP was supposed to begin in July 1940. However, only two prototypes were made, which underwent military tests in one of the sapper battalions. An amphibious version of the apparatus was also developed, known under the designation En!e ("Duck") and built in a single copy. These devices were controlled from an armored car 54ÿÿ 265.

Due to the shortage of remotely controlled tankettes during the invasion of France in 1940, a new method of clearing fields and blowing up bunkers was practiced using light tanks P2Kro No. ÿÿ. For these purposes, 10 tanks were modified, which were equipped with special equipment to accommodate the discharged explosive charge. The German command found this very interesting and ordered the development of a vehicle for special purposes. In October 1941, Vogemaga was ordered, taking into account the experience of creating V Ti V P, to develop a heavy apparatus V IV.

vm

The apparatus V ÿU (5ÿÿÿ{ 301) was originally intended for reconnaissance of enemy defenses by calling on itself enemy fire, detecting minefields, destroying long-term defensive structures, destroying enemy heavy tanks, undermining bridges and other structures if it was impossible to use them for this sappers, destruction of enemy manpower, decontamination of the area and setting up smoke screens.

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The apparatus of the first series ($49.K {.301 Aziyo.A) weighed 3.5 ty and was equipped with a 49-hp Vogemaga-Mog engine. With.

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It had the following dimensions: length 3.65 m, width 1.8 m and height 1.19 m, carried 500 kg of explosive. A fuel reserve of 130 liters gave a cruising range of approximately 120 km.

According to the results of testing prototypes, it turned out that V TU is the most suitable for undermining the target. The driver left the device, which could move at a maximum speed of 38 km / h, to a given place. After that, he lowered the armored panels to protect the equipment from the consequences of demining and then controlled the device by radio from a distance of approximately 800-1000 m, the maximum control range was 2000 m. was dropped remotely from the apparatus near the place that had to be cleared. After being freed from the load, the apparatus returned back to the driver. The dropped charge exploded with a certain delay, undermining nearby mines. Then the next apparatus was sent to the cleared zone, this process continued until a passage was formed in the minefield. The vehicle could also be used against fortifications and against stationary or slow-moving targets. |

In April 1942, 12 experimental vehicles were built. Serial production began already in May, it was supposed to build 3451 devices. By June 1943, 616 vehicles were ready for the TUA, by November - 260 for the TUV, and approximately 305 for the TUS were built from December 1943 to September 1944.
The cost of a serial tankette was 28,000 Reichsmarks. Option B was only slightly different from Option A; it weighed 400 kg more, the location of the radio antenna was changed and improved radio equipment was installed. At least one B GUV was converted into an amphibious version and tested on the water.

The last modification of the apparatus in TUS was the largest - 4.1 m long, 1.83 m wide and 1.25 m high. The device was equipped with a 6-cylinder engine with a volume of 3.75 liters and a power of 78 liters. with., developed a speed of up to 40 km / h. The thickness of the armor was increased to 20 mm, which resulted in a total weight of about 5 tons. In 1943, one of the samples B JU was equipped with a television camera. The apparatus was monitored from the control tank using a television screen.

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The Vogemag vehicles were in service with the Yesh epk (EKI) sapper battalions, where they were first operated together with the R2Krem Sh tanks as mobile command posts, and later with the 0S Sh Ats. E/S. After 1943, the TUs were used in armored units along with the "Tigers" (14 "Tigers" accounted for 45 TUs). Four sapper battalions with VTU took part in the Battle of Kursk for the first time. |

At the beginning of 1945, the Germans needed a light tank destroyer for street fighting in the defended cities, but there was no time to develop new weapons. Then they began to experiment with a launcher with six Kakeepraphegoise 54/1 88-mm rocket-propelled grenade launchers, capable of penetrating 220-mm armor at a distance of up to 200 m, placing on wheeled or tracked vehicles. As a wheeled transport, Kiÿÿÿÿÿÿÿÿÿÿÿÿp was used, and from caterpillar vehicles, a light tank ÿÿÿÿÿÿ ÿ and a captured French tractor Kepaÿi OE (®) were used. Approximately 56 vehicles were converted into Mapge (Klop) tank destroyers at the TU.

Machines of different versions were modified in Wapha in various ways. For example, the version B vehicle received an additional place for the gunner to the left of the driver, protected in front by an armored plate. The launcher was mounted to the left of the shooter, an armored sheet was installed on the launch tubes to protect the shooter during the launch of missiles. C version machine

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was redone in the same way, except that the driver's seat was located on the left. All Maphe vehicles had a smoke screen device in front, which played an important role. During the attack, the tank destroyer rolled out from around the corner of the house to the street for direct fire, then quickly took aim, fired at the enemy and immediately set up a smoke screen. Under the cover of a curtain, the tankette rolled back under the cover of the house. In the event of a successful return, it was possible to reload the rocket launcher for a new attack. In April 1945, an experimental fighter unit

tanks in

As part of the SS Nordland armored division, it acted in Berlin against the Soviet troops. It was armed with Kiÿeÿavep and VGU vehicles.

boÿÿÿ |

In November 1940, Borgvard received an order to develop a small remote-controlled tankette, which should carry at least 50 kg of explosive. The device was named GesShcheg Gadipechgareg (light explosive carrier) ZAKYO 302 (aopa / E) or Fega! 67. As a power plant, two electric motors Boss MM / VOG were used. 2500/24 W.2 with a power of 2.5 kW each. Two batteries provided energy for the engines. The, total weight of the device reached 370 kg, while it developed a maximum speed of 10 km / h. The cruising range of the apparatus was 1.5 km on the road and 800 m on rough terrain. For longer transports, a two-wheeled cart was used, on which the Goliath was delivered to its area of \u200b\u200bapplication. At the rear of the apparatus was a drum that carried a three-wire cable. Two wires were used to control the apparatus and one to detonate a charge weighing 60 kg. "Goliath" was 1.5 m long, 0.85 m wide and 0.56 m high, its body was made of 5 mm steel sheets. Its caterpillars had a width of 16 cm, the device could overcome trenches 60 cm wide.

In April 1942, the serial delivery of Goliaths began, but the cost of the device, according to the weapons department, was too high - 3000 Reichsmarks. Therefore, as early as November 1942, it was decided to begin production of devices with an internal combustion engine — ZAKYO. 303 (Son-aÿ/M). The production of electric Goliaths was supposed to be curtailed only when the rate of production of CoPa® / U\V reached 500 devices per month. The last 69 of the 2,650 electric Goliaths built were delivered in January 1944.

The first version of SoPa / U (ZAK 303a / Segdi 671) was built from April 1943 to September 1944 in the amount of 4604 devices. The device of this version could carry 75 kg of explosives. Two-cylinder engine 2apdarr 527 with a volume of 703 cm? had a capacity of 12.5 liters. With. and allowed the 370-kg device to develop speed

10 km/h The gasoline tank was located in the rear of the hull and had a capacity of 6 liters, which allowed for a maximum cruising range of 12 km on the road or 6-8 km on rough terrain. The body of the apparatus was made of 10-mm steel sheets, it had a length of 1.62 m, a width of 0.84 m and a height of 0.6 m, the engine air intake was located on top. |

The second version of ZAKYO 3035/running! 672 was under construction since November 1944, a total of 325 devices were produced. This version could carry 100 kg of charge, it differed from version "a" in size. The length was now 1.63 m, width 0.91 m and height 0.62 m. Despite the increase in weight to 430 kg, the device could reach a speed of 11.5 km / h with the same engine. Other technical data were the same as for ZAK Y 303a. The charge was placed in front of the hull, while the engine was located in the middle compartment. In the rear part of the hull there was a drum that carried 650 m of wire, and a gas tank was also located there. Apparatus $ 9ÿÿ 303ÿ could overcome trenches 85 cm wide, and ZAK E 3036 even trenches 1.0 m wide, both could overcome a rise of 70 °. The price of SoPa®/U\U was only a little over 1000 Reichsmarks, but this version, as well as

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electric, was not very successful, so it was not often used in combat. Of the almost 5,000 Soya P/U machines produced in January 1945, 3,797 were still in stock.

Sgipdeg

The low efficiency of the use of the Cossack devices forced the development in 1944 of a medium charge carrier called Stripveg $1Kx 304. However, the Zrppvet was too heavy, and its cross-country ability allowed much to be desired. A 4-cylinder Ore!-Moyug engine with a volume of 1.5 liters and a power of 36 liters was used as a power plant. With. The device could develop a maximum speed of 42 km/h, a fuel supply of 42 liters ensured a cruising range of up to 80 km. The thickness of the armor in front was 10 mm, from the sides - 5 mm.

The device carried 300 kg of explosive, it went to the place of application under its own power under the control of the driver. During combat use, control was carried out using the radio system of the company V! ApripK. It was originally planned to produce 460 until May 1945
cars, but

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they managed to make only 50 pieces at the M5J-Megke enterprise. Of this number, only three vehicles were handed over for military trials. It was also planned to use the Zrmpweg as a Mape tank destroyer with a 105 mm gun.

Land electric torpedo Kazantsev

At the end of August 1941, when the Germans were rapidly advancing towards Moscow, the command of the engineering troops of the Moscow Military District decided to urgently start mass production of land-based electric torpedoes - small self-propelled tankettes equipped with an electric motor and controlled by wires. It was assumed that in the event of a German breakthrough into the city, a circular line of defense would be deployed along the Garden Ring with the use of electric torpedoes, which were supposed to unexpectedly jump out of the doorways of houses to blow up German tanks or hit enemy manpower with flamethrowers. The design of these electric torpedoes was developed by A.G. Iosifyan and military engineer 3rd rank A.P. Kazantsev, a famous science fiction writer after the war.

The biography of Alexander Petrovich Kazantsev is very interesting. After graduating from the Tomsk Technological Institute, he was appointed chief mechanic of the Beloretsk Metallurgical Plant. In his free time, he invented an electric tool. With the layout of this gun, he is 193 1t. went on a business trip to Moscow, where he managed to demonstrate his work to the people's commissar of heavy industry, Sergo Ordzhonikidze. Interested in the invention, Ordzhonikidze ordered to give Kazantsev a laboratory at a gun factory near Moscow and immediately sent him by car to report to Deputy People's Commissar M.N. Tukhachevsky, who was in charge of the weapons of the Red Army. Kazantsev was soon transferred to VZI, where he headed a group in the laboratory of A.G. Iosifyan, who systematized everything that was done in the USSR on electric guns.

Three months after the start of the Great Patriotic War, I.G. Kabanov signed an order on the transformation of the Moscow plant

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The People's Commissariat of the Textile Industry to Plant No. 627, appointed Doctor of Technical Sciences Professor A.G. Iosifyan. In order to solve the problems of Moscow defense as quickly as possible, by order of the head of the engineering troops department of the Moscow Military District, plant No. 627 was given military unit No. 5328 with a fleet of vehicles and a repair base located near Perlovskaya station. The commander of this unit, A.P. Kazantsev was simultaneously appointed chief engineer of plant No. 627.

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Plant No. 627, from the first months of its operation, launched the production of hand-operated dynamos, the production of an experimental batch of land-based torpedoes, and made “hedgehogs” of anti-tank barriers that were installed in the area of the All-Union Agricultural Exhibition (now the All-Russian Exhibition Center) and Khimki. The first samples of torpedo tankettes carried 64 kg of explosives and 3 flamethrowers. 2 km of control cable was wound on each of the two coils, at such a distance it was possible to hit targets. Since in the winter of 194] the Germans were thrown back from Moscow, electric torpedoes began to be improved in order to hit not only tanks, but also pillboxes and bunkers. The idea arose of an onboard folding bridge, with the help of which the tankette could overcome the enemy's trenches. All sea trials and testing of any new design solutions were carried out right in the backyard of the plant at the Red Gate in Moscow. For combat testing, plant No. 627 was given two training grounds with residential buildings near the villages of Mytishchi and Zavety Ilyich.

In March 1942, a group of plant employees headed by major engineer A.P. Kazantsev arrived on the Kerch Peninsula for front-line testing of electric torpedoes. During an artillery shelling on May 13, 1942, the enemy destroyed two tankettes, but the remaining two tankettes were used to undermine enemy pillboxes. On May 17, three tankettes were fired from shelters against an enemy tank column. The tanks were destroyed, the combat mission was completed. During June-July, plant No. 627 was preparing a new batch of improved models of tankettes, in addition to this, it produced LMG-1 flying mines, concentrated explosive charges delivered by water on a glider to the target, RS-1 rocket projectiles with a portable launcher to destroy machine-gun points and embrasures at a distance of 50-100 m. Testing and testing of experimental

weapons samples were carried out at the training ground in the Mytishchi region.

On August 2, 1942, a task force of electric torpedoes was sent to the Volkhov Front. There, it organizationally became part of the 5th electrical battalion of the 39th Separate Special Purpose Brigade. The group was tasked with blowing up three enemy firing points with frontal machine-gun fire and two points with flank fire. One torpedo tankette was installed in the selected areas at each point at a distance of 300-350 m. Before the troops attacked, they moved towards the intended targets. As a result, three tankettes blew up firing points, and two tankettes did not reach the embrasures, being blown up by enemy mines about thirty meters away.

In September 1943, the task force blocked the only road through which enemy tanks could pass. With the help of three electric torpedoes and six RS-1 rockets, the group managed to destroy three lead tanks, after which the rest of the tanks turned around and retreated. In January 1944, the task force moved to the area of the Malaya Vishera railway station, where it hit enemy firing points with the remaining six tankettes and three RS-1, which ensured the advance of the Red Army units in this area.

Land torpedoes have not received much development. When the Germans discovered that a “tail” with a cable was stretching behind the tankettes, they began to focus their fire on it. As soon as the cable was interrupted, the tankette stopped and no longer posed a threat. True, there was another combat use for them. By order of Marshal of the Armored Forces P.S. Rybalko mounted plywood mock-ups of Soviet tanks on self-propelled wedges and staged false attacks to reveal enemy firing points. After that, battle tanks replaced plywood and smashed the enemy.

Japanese teletanks and land torpedoes

In 1929, in Japan, under the leadership of Major Nagayama, work began on the creation of radio-controlled tanks designed to clear minefields,

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mine laying and reconnaissance. To test the control systems, modernized caterpillar tractors of the company Eroshin were used.

The Nagayama tank was a modified Eogvop tractor with an armored turret in the driver's seat. The results of testing a prototype teletank were very successful, so at the beginning of 1930 it was decided to modify several tankettes "2594" (type 94) by removing the turret from them and installing a 37-mm gun. Teletanks underwent a series of tests, as a result of which, between 1934 and 1945. In Japan, several very small remote-controlled tanks and tankettes were produced as land torpedoes. However, all of them were experimental samples and in

battles were not used.

Characteristics of the teletank "2594" (type 94): weight - 1.5 tons, length - 3.08 m, width - 1.62 m, engine power - 32 hp. With. (23.9 kW), armor thickness - 12 mm (hull forehead) and 8 mm (board).

15. LAND MINESWEEPERS

The problem of laying passages in minefields or anti-tank and anti-personnel barriers became acute during the Second World War. The sapper services of the belligerents worked quite ingeniously in this direction. The British, for example, created military technical devices Vapvaoge Togredo, Spake and Conveg. Canadians have developed a number of explosive devices such as Olÿop, Cargo, Foa! etc., which were used with the help of a specially modernized tank ÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿÿ| AMKE.

Roller trappers were one of the most common and very simple devices for making passages in minefields. In this role, tanks or tractors were used with a set of heavy rollers attached to the front, the weight of which turned out to be sufficient to destroy the mines. The main problem was the heavy weight and large dimensions of the rollers, which required the use of at least a medium tank to move them. In practice, two tanks were often used to move massive rollers over soft ground. The British used the AMKA and AMESK roller minesweepers using tanks Svoi, Enegtal, and Sauepashcheg. The Canadians used the SKR system with the same tanks, the Americans were armed with the 11 system with the M3 tank, TTE1 with the M32 recovery and recovery tank, and TIES with the M4 Starman tank. Based on the M4 tank, the minesweeper T15 was developed with additional armor, which simply moved over the mines and blew them up, relying on its powerful armor.

The losses suffered by German armored vehicles from Soviet mines, as well as the low efficiency of the remotely controlled tankettes of the Bogewagd company, became the reason for the start of the development of roller minesweepers by the Germans. Firms AZhey and Kgirr were given the task to create machines capable of making passages in minefields with a width of at least 3 m.

Vapdaioge Togredo

The vapealoge togredo is a military technical device that was used by the British as early as during the First World War to clear passages in barbed wire. In its simplest form, the Vapvajoge Togredo was a metal tube filled with explosives and sealed at both ends. Most of the Bangalore types used by the British during World War II had mechanical fasteners at each end to increase the length of the torpedo. These, about 1.5 m long, were used to lay paths through minefields. The torpedo was attached in front of the Syrksi AUKE tank, which pushed it into the mined area sectional torpedoes and blew it up there. However, sappers were often called upon to make passages in large minefields. In these cases, to save time and effort, longer torpedoes of the Zpake (“Snake”) modification were used. One explosive-filled section of the "Snakes" had

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a length of 6.1 m, of which it was possible to make a torpedo with a total length of up to 366 m. Such a long torpedo was pushed by a tank (usually Sligerush or Zegtap was used) into a minefield and then undermined, this made it possible to clear a path up to 6.4 m wide.

The British also used a device called Sopreg (“Eel”), which was a long hose. One end of the hose was attached to a rocket, with the help of which it was thrown into a minefield. The Eel was then pumped up with liquid explosive and detonated
whether it.

The smallest torpedo in the Barbaroge family was the Euine Barbaroge flying model. It was equipped with a rocket engine and was designed to clean the passages of

cutting barbed wire. The torpedo was launched on a wire fence, on the final section of the trajectory it caught on the wire with its small hooks, after which it was blown up.

ÿÿÿÿÿÿÿ AMVE

Since 1942, the British and Canadians have been using the Churchill tanks as a base for the modernization of their sapper equipment. The task was mainly to remove the main weapon and completely remodel the inside of the hull to store various engineering devices such as explosives, special tools, mines, etc. The turret was saved, but the gun was installed in place the Retag howitzer, which fired near the 290 mm caliber, this projectile was known to the troops as Nute Izb (“Flying Dustbin”). The weight of the projectile was 18.14 kg, it could be fired at a distance of up to 73 m in order to destroy long-term defensive structures, bunkers, etc. e. This engineering version of the tank was named Spags! AUKE (Armored Mece Koua! Envipeer - armored vehicle of the Royal Engineers), it quickly became the standard equipment of the sapper units that were part of the 79th Armored Division and assault brigades. For re-equipment in AUKE, mainly Sÿigsÿÿ tanks of modifications Mk Shi MKTU were used. A hook at the rear of the tank's hull was used to tow a special sled for transporting ammunition and equipment.

One version of the AUKE used a device called [agre Opyup (Large bow)] installed in the front of the tank, which was a steel frame with various explosive charges placed in it. The charges were used to blow up anti-tank gouges, bunkers, pillboxes, etc. The frame with the charges was attached to two beams, one on each side of the AUKE, and moved to the target in a vertical position. At the target, the frame was unhooked, while the beams ensured the fall of the frame exactly opposite the target. The charges were detonated with the help of an electric cable after AUKE drove back to a safe distance.

As a development of Gagwe Opyup, the subversive device Foa was used! (“Goat”), which was much larger in size and had a frame 3.2 m wide and 1.98 m long. A charge weighing up to 816 kg could be placed on the frame. The "goat" was brought up by a tank and uncoupled opposite the target that was supposed to be destroyed, after which the AUKE drove far back and detonated the charge.

A modification of the "Goat" was Yemagabje Soa! (“Rising goat”), which was intended for action against high obstacles such as anti-tank gouges, was transported on the AUKE tank like an assault bridge. Charges were placed on the bridge, which were dropped onto the anti-tank head, while the charges were located on both sides of the head. After the tank retreated to a safe distance, the charge was detonated.

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Another device that appeared in 1942 was the Sato (Carrot) subversive device. It was much simpler than Gagve Opion, and consisted of a charge fixed in front of the AUKE on a steel lever. The idea was that AUKE simply moved closer to the target, after which the charge was blown up. The weight of the charge varied from 5.44 to 11.34 kg, the smaller charge was called 1121 Carrot ("Light Carrot"). "Carrot" was widely used for testing, but all work on it was suspended at the end of 1943, it was not used in hostilities.

Characteristics of Sigschush AUKE: crew - 6 people, weight - 38 tons, length - 7.67 m, width - 3.25 m, height - 2.79 m, maximum speed on the highway - 24.9 km / h, cruising range on highway - 193 km, armament - howitzer Reag4 and one 7.92-mm machine gun.

Aken Vaotdegaÿ

The first model of the German minesweeper AZhey Kaotega was built in 1942, the thickness of the armor of the vehicle was from 20 to 40 mm in different places, and from below the thickness of the armor reached 80 mm in order to withstand mine explosions.

The car was made according to a three-wheeled scheme: two main wheels with a diameter of more than 2 m in front and behind one steering wheel with a smaller diameter. The wheels were equipped on the rim with steel removable shoes, which

it was supposed to crush mines. The vehicle was 2.7 m high, 10 m long and weighed 40 tons. However, field trials showed that the low speed and imposing size of the vehicle made it an easy target for the enemy. Pretty soon it became clear that conventional tanks converted for this purpose were much more practical, so work on the AJ Kaotvega was interrupted. Ten of these machines were discovered by Soviet troops in Kummersdorf at the end of the war.

Waoteg 5

In 1944, the Kgirr company created its own version of a super-heavy minesweeper. This monster weighing 130 tons, 3.27 m wide and 15.63 m in total length moved on four steel wheels with a diameter of 2.7 m. Removable rubber shoes 150 mm thick were attached to the wheel rims. Structurally, the Kaitet $ consisted of two identical two-wheeled platforms connected by a massive hinge assembly. Each part of Kashteg $ was equipped with a Mauÿas NI90 engine with a capacity of 360 hp. With. The prototype Kashteg $ was captured at the end of the war by American troops at the training ground in Hillersleben.

16. HEAVY AND SUPER HEAVY TANKS

In 1911, Vasily Mendeleev, the son of the great scientist D.I. Mendeleev, developed a project for a super-heavy tank, which at that time combined all the advanced engineering solutions. The tank weighing 173.2 tons was equipped with a 120-mm naval gun, which was mounted in front of the hull. On top of the hull there was a machine-gun turret with a circular view, which rose outward and fell inward with the help of a pneumatic drive. The thickness of the armor was 150 mm (forehead) and 100 mm (sides, stern, roof), 250 hp engine. With. allowed to develop a maximum speed of 24 km / h. To transfer the tank by rail, it was supposed to put it on railroad wheels, after which it could move under its own power. However, the Russian military ministry was not interested in this project.

The idea of creating mobile fortresses was picked up by the Germans, who implemented it during the First World War. In late March

1917. The German War Ministry issued requirements for

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development of a super-heavy tank weighing up to 150 tons. It was supposed to first build an experimental batch of 10 vehicles, and then start mass production of 100 tanks. The contract for the construction of five copies of the K-Warep tank (Kovza]-U/azen or simply Kotozza!) Was issued to the Ribe company (Berlin-Weissensee), and five others - to the Wagonfabrik Wegman company (Kassel). The construction of tanks began in April 1918, by the end of the war "Ribe" managed to almost complete one tank, and for the second tank an armored hull and a set of main units and assemblies were ready. After the defeat of the Germans and the conclusion of the Treaty of Versailles, the built cars were scrapped.

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Colossa-vagen

The French in 1917 began the development of a 70-ton 2C tank with a 75-mm cannon and 36 mm thick armor. It was supposed to produce 300 vehicles already in 1919, but due to the end of the war, production was abruptly curtailed, and until 1923 only 10 2C tanks were manufactured. In the 20-30s. heavy and super-heavy tanks were created in different countries: ATE1 (England), V-1, V-1N5 and V-er (France), type 91 and type 92 (Japan), OgozutaK og P and No. E2 (Germany), T-35, T-100 and SMK (USSR).

During World War II, the armies of different countries used heavy tanks: T-35, KV (various modifications), IS-1, IS-2 (USSR), Panther, Tiger, Tiger P (Germany) , M26 (USA), Spigs! (England). The ever-increasing power of allied armored vehicles forced German designers to develop new projects by the end of the war, in which the emphasis was on super-heavy (weighing over 100 tons) and giant (weighing over 1000 tons) tanks. They, according to the plan of the developers, were to become mobile means of reinforcing long-term defensive zones to cover possible gaps between strong points in accordance with the changing situation. |

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M26

From the very beginning of the war, the Americans focused on the production of medium tanks MZ and MA. The project of the heavy tank M6 began to be developed only after the German Panther and Tiger tanks appeared on the battlefields, then two heavy tanks T25 and T26 were developed, equipped with a new 90-mm gun. The T26 tank received the highest priority, 20 T26EZ modification vehicles were sent to Europe as part of Operation Zebra.

In January 1945, the T26EZ tank was put into service under the designation M26 "Pershing" in memory of General J. Pershing, who founded the American tank corps during the First World War. At the same time, the T26E2 tank, armed with a 105 mm howitzer, received the designation M45 and was put into service as an infantry close support tank. At the end of the war, a large number of M26s were sent to the Pacific theater of operations.

For the first time on an American tank, an adequate ratio of armor (minimum 12 mm, maximum 102 mm) and firepower appeared. With 90 mm gun; Originally intended for use as an anti-aircraft gun, the M26 had armament equal to or superior to any of its contemporary tanks. Auxiliary - one 12.7 mm and two 7.62 mm.
body weapons included three machine guns

On the basis of the Pershing tank, a number of special vehicles were created: the T84 200-mm self-propelled howitzer, the T92 240-mm self-propelled howitzer, the 193 200-mm self-propelled artillery mount, the TZI ammunition carrier and the 112 armored repair vehicle. A flamethrower tank, a cargo armored personnel carrier and a combat sapper vehicle were also developed.

Characteristics of M26: crew - 5 people, weight - 41.7 tons, length (with gun) - 8.79 m, hull length - 6.51 m, width - 3.51 m, height - 2.77 m, power plant - Goga SAE engine

Machine Translated by Google

with a capacity of 500 liters. With. (373 kW), maximum speed on the road - 48 km/h, cruising range on the road - 148 km, armament - one 90 mm M3 cannon, one 12.7 mm M2 machine gun and two 7.62 mm machine guns "Browning", armor thickness - 102 mm (turret forehead).

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t28

While preparing to open a second front in Europe, the US military agreed that in order to break through long-term defensive positions like the German Siegfried Line, a heavy tank with the highest possible armor and a powerful gun would be needed. After long negotiations between the military and the armaments department, in March 1945 it was decided to order five tanks under the designation T28, weighing up to 95 tf, with 305 mm frontal armor and a 105 mm T5E1 gun.

Given the large thickness of the armor, it was decided to make the tank turretless with a 105-mm cannon installed in the frontal part of the hull. Auxiliary armament in this case was to consist only of a 12.7-mm anti-aircraft machine gun on the commander's cupola. Since it was originally planned to use a 500-horsepower Ford SAE engine from the M26 tank, there were problems with ensuring the mobility of such a heavy vehicle. It was decided to install two pairs of tracks on each side. External tracks could be dismantled by the crew and towed behind the tank when driving along the highway. Soon, given this layout of the machine, it was decided to rename it to the T95 self-propelled gun. However, due to the heavy workload of the industry with military orders, for a long time they could not find a contractor for the manufacture of these self-propelled guns. In the end, the Pacific Car and Foundry Company gave its consent, which began work in May 1945, and by August 1945 assembled the first building. The original plan called for the construction of five prototypes with the subsequent release of a batch of 25 machines.

Tests have shown that the T95 has a very low speed - no more than 13 km / h. On the other hand, the heavily armored and powerfully armed T95 self-propelled gun did not fit into the concept of armored weapons of the US Army. Therefore, with the end of the war in the Pacific, the Americans limited themselves to the production of only two self-propelled guns, which were sent to the Aberdeen Proving Ground in December 1945 - January 1946. In June 1946, the name was changed again - the vehicle again became the T28 heavy tank. Nevertheless, work on the T28 soon stopped - almost 100 tons of weight for the tank was considered unnecessary.

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BE 109 (Central Museum of the Great Patriotic War)

Aircraft carrier attack Deck fire

Moments before the explosion

Seeing off the kamikaze on the last flight Submarines for suicide bombers

US of early releases with a single warhead. Model

The exploding boat Vagsipo. Model

T-18 (MS-1) (Military Historical Museum of armored weapons and equipment)

e:=

T-26 (Central Museum of the Great Patriotic War)

= e)

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Vogizhaga TU Liÿÿ.V and control tank Ru. Krb I Ach]. Model

Vogrmaga 54.KE. 301 Aiÿÿ. B (above - in the stowed position, below - the charge is discharged). Model

"Goliath" on a trolley (Military History Museum of armored weapons

research and technology)

Minesweeper Alkett Raumgerat

gank weapons and equipment)

(Military Historical Museum of Armor

Remote controlled tankette V TU (center) (Military History Museum of armored weapons and equipment)

Sukhoputnal torpedo Kazantsev (Military-Historical Museum of armored weapons and equipment)

IS-3 (Military Historical Museum of armored weapons and equipment)

Super-heavy tank "Maus" (Military-Historical Museum of armored weapons and equipment)

MZ (Military Historical Museum of armored weapons and equipment)

M5A! (Military Historical Museum of armored weapons and equipment)

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Renault ET-17 (Military Historical Museum of Brunette Weapons and Equipment}

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TM-3-12 (Military Historical Museum of armored weapons and equipment)

TM-1-180 (Central Museum of the Great Patriotic War)

Hero Mode

Wehrmacht soldiers with a self-propelled mine Sokak. Model

German unit, the Soldier on the right is armed with an ETS 44 with a device

for shooting from cover. Model

German ammunition delivery container (Central Museum of the Great Patriotic War)

Red Army soldiers in bulletproof vests CH-42. Model

German armored shields (Central Museum of the Great Patriotic War}

5.M.79

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Machine Translated by Google

Mistel K135+0E$ 230

"Mistelle" ji 88A-4+ B! 109E

"Mistelÿe ÿi 88ÿ-1+ Ru 1904-5

"Mistelle" Ta 154 + E% 190

"Mistelle" Not 162+ Ag 344

"Mistel" Ag 234+ Ag 2.377

"Mistel" - ekranoplan

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88-222

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ABMA

A6m5

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Ki-15-1

Ki-27

"Bank" |

"Bayka" P

"Bank" P

=

"Oka" double

~

"Oka" model 2:

"Betty" with a suspended "Oka"

Characteristics 128: crew - 4 people, weight - 95 tons, length - 11.13 m, width - 4.45 m, height - 2.84 m, power plant - Roga DAR engine with a capacity of 500 hp. With. (373 kW), maximum speed on the road - 13 km / h, cruising range on the road - 148 km, armament - one 105-mm cannon and one 12.7-mm machine gun, armor thickness - 305 mm (forehead of the tower).

AZ9

Machine Translated by Google

During the war, the British developed a project for the heavy tank A39 Tortoise (“Turtle”), which was intended to overcome heavily fortified areas of the enemy. It was supposed to equip the tank with a modified 94-mm anti-aircraft gun, which during the tests was successfully used against the German "Panther" from a distance of almost 1000 m. The gun was installed in front of the hull, one 12.7-mm machine gun was installed as an additional weapon. The internal volume of the tank hull was divided into three compartments: the transmission was in the front compartment, the crew was located in the center, and the engine was in the rear compartment.

As in the case of the T28 tank, disagreements arose regarding the classification of the A39, since it did not have a turret, but looked more like a self-propelled or assault gun. Topoye was tested, but did not take part in the hostilities.

Characteristics of the A39: crew - 7 people, weight - 78 tons, length - 10.1 m, width - 3.91 m, height - 3.04 m, power plant - Kose-Kose Mejeor engine with a capacity of 600 hp. With. (448 kW), maximum speed on the road - 19.3 km / h, armament - one 94-mm cannon and one 12.7-mm machine gun.

tob-N.

The project of the English heavy tank TOS (abbreviation Te Oa Sape - “Old Brigade”) was completed before the start of World War II. Its development followed the outdated military concepts of trench warfare inherited from the First World War. The prototype 'TOV-T' appeared in 1939, but changed specifications led to the appearance in 1941 of a second prototype, which retained many of the features of the TOC-I,

but it had a 76 mm cannon and weighed 80 tons. Although the tests of the TOS-P were completed successfully by May 1943, the tank concept was rejected as impractical.

Characteristics of TOS-P: crew - 6 people, weight - 80 tons, length - 10.13 m, width - 3.12 m, height - 3.05 m, power plant - 600 hp diesel engine. With. (448 kW), maximum speed on the road - 8.5 km/h, armament - one 76-mm cannon, armor thickness - 62 mm (turret forehead).

Spogs I MK Mi/ Mk UP In September 1939, the development of an infantry tank to specifications known as the A20 began at the Garland Znd d Wolf firm in Belfast. In June of the following year, four prototypes of the ordered tank appeared, but further work stalled on this, because new technical requirements for the A22 were formulated for the tank. | _ The contract was concluded with Vauxhall Motors, which continued to work on the tank in accordance with your requirements. In June 1941, the first fourteen production models of the infantry accordance with.no- , tank MK TU, also called Sÿitsÿ Sh, were ready. on Sÿig-SY U and SÿigsÿSH UP. The shape of the turret was changed, improvements were also made to the undercarriage, caterpillars, etc. engine. In total, there were 11 modifications of the Sÿiteÿsh tank, on its basis many special variants were created, for example, the Sÿigesÿ AUKE for sappers, the Spicy Sgosodshe flamethrower tank, as well as various bridge layers and tractors. The most powerful modifications of the tank were the Spigs in the ShUP with reinforced armor, a 75 mm cannon and a commander's cupola, and the Sÿshsÿÿ MIP with a 94 mm howitzer. Characteristics SÿsheÿSH UP: crew - 5 people, weight - 40.6 tons, length - 7.44 m, width - 2.44 m, height - 3.45 m, power plant - Veyog engine with a capacity of 350 l. With. (261 kW), maximum speed on the road - 20 km / h, cruising range on the road - 145 km, armament - one 75-mm cannon and one 12.7-mm machine gun, armor thickness - 152 mm 0290 hull) and 95 mm (front of the tower).

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T-35/T-135

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Work on the creation of the T-35 heavy tank began in the Soviet Union in 1929; 3 and
three DT machine guns, the armor had a thickness of 10 to 30 mm, the weight of the tank was 421.

And two years later, the Kharkov Locomotive Plant named after. The Comintern produced the first
production tank T-35A, which was intended to break through especially strong and fortified defensive
lines in advance. Its three cannons and machine guns, located in five rotating towers, provided
all-round fire, which gave certain advantages for fighting infantry in the depths of the enemy
defenses. During the production process, changes were repeatedly made to the design of the
T-35. Its mass increased to 55 tons, the number of crew members decreased from 11 to 9. The latest
models of the vehicle had conical turrets, the design of the side screens was changed, the suspension
elements were strengthened, and the guns were replaced. Tank production continued until 1939, with a
total of just over 60 vehicles built. Based on the T-35 tank in 1935-1936. prototypes of self-propelled
artillery mounts SU-14 with a 203-mm B-4 howitzer and a 152.4-mm B-10 naval gun were
developed.

The T-35 tank has been in service with the Red Army since 1935 and took part in the hostilities of the
Soviet-Finnish War and the first period of the Great Patriotic War.

In 1940, a decision was made to develop the T-135 heavy tank. It was a tank with reinforced armor and
powerful weapons, including a 152-mm howitzer to deal with

"tami and two 76-mm guns, suitable both for fighting

tanks, and for other tasks, in addition, there was an auxiliary machine-gun armament. The turrets were
unified with the tanks of the KV series, the placement of weapons repeated the proven scheme
of the T-35. In 1941, they managed to build one prototype, but with the start of the Great Patriotic War, all
work on the T-135 was stopped.

Feather T-35A: crew - And man, weight - 50 tons; length - 9.72 m, width - 3.2 m, height - 3.43 m,
power

291.

installation - M-17T engine with a capacity of 500 liters. With. (373 kW), maximum speed on the road - 30
km / h, cruising range on the road - 120 km, armament - one 76.2 mm KT-28 gun, two 45-mm guns of
the 1932 model and six 7.62 -mm DT machine guns, armor thickness - from 10 to 30 mm.

KV-1/KV-2

Two years after the adoption of the heavy tank T-35, it became clear that he would need to be replaced.
In accordance with the decision of the USSR Defense Committee, at the end of 1938, the Kirov Plant in
Leningrad began the development of two versions of a new heavy tank - a two-turret SMK (“Sergey
Mironovich Kirov”) and a single-turret KV (“Klim Voroshilov”). In August 1939, prototypes of the SMK and KV
tanks were ready, they were transferred for military trials to the 20th tank brigade, which participated
in the battles on the Karelian Isthmus. The tanks took their first battle on December 17 when they tried to
break through the Khottinensky fortified area.

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Mannerheim Research Institute. During the breakthrough, the SMK tank hit a mine and was abandoned by
the crew, but the KV tank showed its best side, so on December 19, a heavy tank under the designation
KV-1 was adopted by the Red Army.

The first variant of the tank was armed with a short 76.2 mm cannon and three or four 7.62 mm
machine guns, with armor up to 100 mm thick. However, it soon became clear that the 76-mm gun was
weak for fighting pillboxes. Therefore, in a short time, they developed and built the KV-2 tank with a tower to increase

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personal size, armed with a 152 mm M-10 howitzer. Serial production of the KV-1 and KV-2 tanks began in February 1940 at the Kirov Plant in Leningrad, by the end. In the same year, the Chelyabinsk Tractor Plant (ChTZ) joined the serial production of the tank. Starting from November, instead of the L-11 gun, the KV-1 tank was equipped with the 76-mm F-32 gun. The KV-2 tank was produced in limited quantities and was in production in 1940-1941, after the start of the Great Patriotic War, its production was stopped.

In 1942, instead of the KV-1 tank, they began to produce its modernized version - the KV-1s ("s" - high-speed). The mass of the tank was reduced to 42.5 tons by reducing the thickness of the hull armor plates, the mass of the power transmission units and the undercarriage (the caterpillar was narrowed to 608 mm), as well as by reducing the overall dimensions of the turret. The cast tower acquired a new streamlined shape and a commander's cupola. From September 1943, a new version of the KV-85 tank with an 85 mm caliber gun began to enter the troops. In 1942-1944 Serially produced self-propelled artillery mount SU-152 (KV-14), built on the basis of the KV-1s tank and armed with a 152-mm howitzer gun ML-20. During the war years, 4775 KV tanks of all modifications were produced.

Characteristics of the KV-85: crew - 5 people, weight - 43 tons, length - 6.68 m, width - 3.32 m, height - 2.71 m, power plant - V-2K engine with a capacity of 600 liters. With. (448 kW), maximum speed on the road - 35 km / h, cruising range on the road - 150 km, armament - one 85 mm D-5 cannon and three 7.62 mm DT machine guns, armor thickness - from 30 to 75 mm.

Characteristics of the KV-2: crew - 6 people, weight - 52 tons, length - 6.95 m, width - 3.32 m, height - 3.25 m, power

installation - V-2K engine with a capacity of 600 liters. With. (448 kW), maximum speed on the road - 35 km / h, cruising range on the road - 140 km, armament - one 152 mm M-10 howitzer and two DT machine guns, armor thickness - from 30 to: 75 mm.

IS-1/IS-2/IS-3

In the summer of 1943, the Kirov Plant in Chelyabinsk developed the first version of the heavy tank IS-1 (“Joseph Stalin”) with an 85-mm D-5T gun. In August, by a GKO resolution, the IS-1 (or IS-85) tank was put into service, and its mass production began at the end of October.

Simultaneously with the IS-1, the production of a more powerful variant under the designation IS-2 with a 100 mm S-34 cannon began. In October 1943, a variant of the IS tank with a 122 mm D-25 cannon was developed. Tests of the tank at the test site showed that the 122-mm gun from a distance of 1500 m pierces the frontal armor of the German Panther tank. At the beginning of 1944, the IS-2 was put into serial production.

As the production progressed, the IS-2 was repeatedly upgraded. First, the aiming devices were changed on the IS-2 and the armor mask of the gun was expanded: After some time, vehicles with an inclined frontal part of the hull without a driver’s inspection hatch, but with a slot closed by a glass block, began to roll off the assembly line. Then, on some tanks, they began to install: a large-caliber anti-aircraft machine gun DShK. During the war, about 3,500 IS-2 tanks were produced.

In 1944-1945. the IS-3 heavy tank was being developed, its serial production began in May 1945, but only a few vehicles managed to be completed before the end of the war. When developing the design of the IS-3 tank, the conclusions of the commission, which investigated the combat damage received by tanks during the Battle of Kursk, were taken into account. In the new tank, the slope of the armor plates, especially in the front of the hull, was brought to the maximum possible. So, for example, 120 mm frontal armor plates were located. so that a three-slope, forward-elongated bow was formed; received the name "pike nose". New constructive. forms of armor named after 2

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The IS-3 tanks did not have time to take part in the hostilities of the Second World War, at that time they were the most powerful tanks in the world. In the middle of 1946, the IS-3 tank was taken out of production, and only 1,170 of them were produced.

Characteristics of the IS-1: crew - 4 people, weight - 44 tons, length - 8.56 m, width - 3.07 m, height - 2.73 m, power plant - V-2IS engine with a capacity of 520 liters. With. (387 kW), maximum speed on the road - 37 km / h, cruising range on the road - 240 km, armament - one 85 mm D-5 cannon and three 7.62 mm DT machine guns, armor thickness - 100 mm (forehead hull) and 100 mm (turret forehead).

Characteristics of the IS-2: crew - 4 people, weight - 46 tons, length - 9.83 m, width - 3.07 m, height - 2.73 m, power plant - V-2IS engine with a capacity of 520 liters. With. (387 kW), maximum speed on the road - 37 km / h, cruising range on the road - 135 km, armament - one 122 mm DShK cannon, one 12.7 mm and three 7.62 mm DT machine guns, armor thickness - 120 mm (hull forehead) and 160 mm (turret forehead).

_ R; Cream U Rapse

Work on the creation of a heavy tank, more advanced than the medium tank R2Krÿm TU (Rapkhetkatr avep - armored fighting vehicle), began in Germany as early as 1937. Nepsce companies were involved in the work! and Rogsce, but progress was slow due to frequently changing requirements.

Originally Nepsse! created two samples of the tank of the intermediate type RM. Ty ROM. P, and then on its basis the UK 3001 (N) tank was developed. A total of four prototypes were produced: the first two in March 1941 and two more in October of the same year. In August 1941, the first and second prototypes were converted by the firm Kveshte!an-Votakh into a 12.8-cm self-propelled artillery mount (in Germany, the caliber of the gun was indicated in centimeters). One of these self-propelled guns took part in the fighting on the Soviet-German Fropt, R "

By September 1939, the Rogsche firm had developed a design for the UK 3001 (P) tank. It was assumed that it would be equipped with a 7.5 cm gun or, if possible, with a 10.5 cm gun.

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Two prototypes of the tank were built at the Mebezhipwep plant in Lower Austria. The design of the tank used a new power plant, which was later used in all models of Professor Porsche. The engine drove generators that fed two electric motors with a capacity of 210 hp each. With. Electric motors and drive systems caused problems during testing in 1941-1942.

At the end of 1941, a requirement was issued for a new tank with a long 75 mm gun, new armor and larger diameter rollers. In accordance with these requirements, the Rutleg-Vepg company presented the design of the UK 3002 (OV) tank, while the MAM company presented the design of the UK 3002 (MAM). For mass production, they chose the MAM project, which was almost a copy of the Soviet T-34 tank. The new tank received the designation R2Krÿm U Rap!Sheg ("Panther") (5ak: 171).

Compared to the RxKrÿ [U] tank, it had more rational forms and was armed with a 75-mm cannon, the projectile of which at a distance of 1000 m pierced armor 130 mm thick. A number of innovations were used in its design: hydraulic control of the brakes, a device for blowing the barrel with compressed air after a shot, a hydraulic drive for turning the turret, etc. However, the tank turned out to be difficult to manufacture and operate, its technical reliability was poor.

juice.

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The first prototypes of the new tank were completed in September 1942, and the first modification A vehicles left the MAM factory just two months later. The firm Raschegger-Veng produced technological equipment for the production of the Panther, and in 1943 the firms Nepzesse], Noelierzhaszhen and about a hundred more were connected to this program.

- other subcontractors. It was planned to produce 600 Panthers per month, but due to frequent bombing by Allied aircraft, the maximum production rate did not exceed 330 tanks per month.

The Panther was put into production without proper testing, and numerous errors soon became apparent: indeed, at the very beginning of combat use, the Panther was lost due to mechanical failures more than from enemy actions. The tank first entered
v

action on the Soviet-German front in July 1943 during the battles of Kursk, and since then it has been used on all fronts. During the war, four more modifications of the tank were developed - B, C, ri C, of which only modifications of the ri C were put into production.

Once the mechanical problems were fixed, the Panther became the best German tank of World War II. On some tanks of modification C, night vision devices EC 1250 were installed, side armor was reinforced with hinged bulwarks that protected against cumulative projectiles, and zimmerite coating was applied to the armor to protect against magnetic mines and grenades. Variants of the Panther included a reconnaissance tank (Veobas przrapheg Rapÿÿeg), a tank destroyer (Tavdrap eg) and a command tank (Veashsapteg Rap Fet).

By the end of the war, a new Rap eg P tank was developed, equipped with an 88 mm KUK 43 cannon with a barrel length of 71 caliber. However, before the surrender of Germany, only two prototypes of the tank were built. In total, about 6,000 P2Krem U tanks were produced during the war. In the postwar period, a large number of Panther tanks were in service with the French army.

Characteristics of Ru Krÿi U Rapÿÿeg Ach$ÿ A: crew — 4 people, weight — 45.5 t, length (with gun) — 8.86 m, hull length — 6.88 m, width — 3.43 m, height - 3.1 m, power plant - Mauÿasÿ NT engine. 230 R with a capacity of 700 liters. With. (522 kW), maximum road speed - 46 km / h, cruising range on the road - 177 km, armament - one 75-mm cannon and three 7.92-mm machine guns, armor thickness - 80 mm (hull forehead) and 100 mm (forehead of the tower).

RuCrem MI Tideg

In 1941, Henschel was given an order to develop a 36-ton tank, called ÿÿ 3601 (ÿ), which was supposed to have a maximum speed of 40 km / h, good armor and a powerful gun. This tank had the main components in common with the UK 3001. The main weapon was to be a cannon with a conical bore (0725 gun). However, after Hitler banned the use of such guns, the tank was converted to another gun. The prototype of this tank

was built, but the work was not further developed, since in May 1941 the company received an order for a 45-ton UK 4501 tank, which was supposed to be equipped with an 88-mm anti-tank gun. The project was to be completed by April next year. Since there was no time, Henschel used the UK in the design of the new tank. 4501 (N) technical solutions obtained during the development of tanks UK 3601 (N) and UK 3001 (N).

An alternative project of the tank under the designation UK 4501 (P) was developed by Rogzse. In the design of the UK. 4501 (P) used the main components from UK 3001 (P), but adapted for a heavier machine. The engine was moved to the rear of the hull, creating an even distribution of weight on the tracks, the power of the electric motors was increased to 320 hp. With.

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Both competing prototypes were completed on schedule and then demonstrated at Hitler's birthday party. As a result, the Henschel project was selected in August 1942 for serial production under the designation ÿÿÿÿÿÿ ÿÿ ÿÿÿÿÿ ÿÿÿ! E (ZAK 181). The Tiger had a box-shaped hull with vertical frontal and side armor. In front of it housed the driver and gunner-radio operator, transmission mechanisms were also located here. The fighting compartment with a cylindrical turret was located in the middle part of the tank hull, the engine was located in the rear part of the hull. The tank was equipped with a semi-automatic 88-mm anti-aircraft gun with a barrel length of 56 calibers, the armor-piercing projectile of this gun at a distance of 1000 m was able to penetrate 115-mm armor.

In case the tests of the pre-production Tigers failed, the Porsche company was ordered a batch of 90 UK 4501 (P) tanks. Subsequently, they were completed as tank destroyers under the designation Raptegareg Tiveg (P) Egainapa ($ak?x 184). The tank destroyer got its name after the head of the company F. Porsche. The last of the 90 Peerpa papa machines were delivered in May 1943, but most of them were lost at the fronts due to technical failures in the complex engine system and because of their clumsiness.

Taking into account the experience of street fighting in SORA: November 22, 1942, Hitler decided to produce a ram

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tank Kattiveg - the destroyer of obstacles and barricades. The Rogvse firm completed the development of the project by December 7, 1942. According to the project, it was a tank armed only with MO machine guns, a streamlined shape was given to the tank hull, and a ramming device was installed in the front of the hull. Theoretically, the streamlined shape of the tank's hull allowed rubble, stones, and fragments of rubble and barricades to simply slide off the vehicle. Already on January 5, 1943, Hitler ordered three chassis from UK4501 (P) to be adapted for Vashirer / Kaitraumer T1er (P). By August of the same year, all three prototypes were ready, but \ 'their fate is unknown.

The "Tiger" was in mass production from August 1942 to August 1944, during this time 1350 tanks were produced. There were four variants of the "Tiger": the main tank, the command

the Dir tank (Vegevrapgeg Tiveg), which was actually the main tank with the machine gun removed, reduced ammunition load and added radio equipment, the repair evacuation tank with the cannon removed, instead of which a powerful winch with a pulling force of 10 tf was installed, and a self-propelled gun 5 ttireg with a mortar of caliber 380 : mm; Commander's tanks were built 84 copies, and: "TIturmtigr" only 10 copies.

At one time, the "Tiger" was one of the best German tanks with a powerful gun and good armor, but it was structurally complicated and therefore difficult to manufacture. One =: One of his main shortcomings was that his wheels were often clogged with clay and stones. On the Naga-Soviet-German front this could be a disaster, during winter nights the clay would freeze so much that by morning the tank would be immobilized, often at the time when the Soviet troops launched their attacks. The second disadvantage was that 51.5 cm wide tracks were used when moving the tank on the roads, while 71.5 cm wide tracks were used for moving over rough terrain or in combat, since this gave lower pressure on the ground. . The main armament included an 88 mm KUK 3 cannon and two 7.92 mm MS 34 machine guns. The Tiger was first encountered by British troops at Ye and then it appeared on all fronts. : 5 ronis

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Characteristics of R2Krÿ MG Preg AÿS E: crew - 5 people, weight - 55 tons, length (with gun) - 8.24 m, hull length - 6.2 m, width - 3.73 m, height - 2.86 m, power plant — Maubas NI engine. 230 R45 with a capacity of 700 liters. With. (522 kW), maximum speed on the road -

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38 km/h, cruising range on the road - 100 km, armament - one 88-mm cannon and two 7.92-mm machine guns, armor thickness - 100 mm (front of the hull) and 110 mm (front of the turret).

R; Cream Mÿ Tÿdeg I

The Tiger had just been launched into mass production, and a decision had already been made to develop a version of the tank with more powerful weapons and reinforced armor. Again, Nepsce firms were involved in the development! and Rotÿsÿÿe.

F. Porsche first developed a tank project based on the UK 4501 (P) project, but equipped with a 150-mm gun. This draft was rejected in favor of a new draft UK. 4502 (P) with an 88 mm gun, however, this was soon canceled due to the presence of an electric transmission, which used too much copper, which was scarce at the time. By this time, 50 turrets of this variant were already in production, so they were subsequently adapted to Nepsce! tanks.

The project UK 4503 (N) of Nepsche1 was completed in October 1943, and it was declared the winner. The production of the Tiveg P or RuKrÿu ÿÿ Preg P Aizÿ V (ZAK 182) tank began in Kassel in December 1943, the first 50 tanks were equipped with Rogzse turrets, but all subsequent tanks were equipped with Nepzeÿe! turrets. The "Tiger" P or Koper Geg ("Royal Tiger") appeared for the first time on the Eastern Front in May 1944, and on the Western Front (in Normandy) in August of the same year. |

In many respects, the King Tiger was similar to the Panther tank, it was equipped with the same engine as the later Panthers, the result was a lower power-to-weight ratio, and therefore the tank was less mobile than "Panther". While its armor protected against almost all the cannons mounted on Allied tanks, the King Tiger was still unreliable, and its heavy weight made it difficult to move it to the battlefield.

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Many tanks were abandoned or blown up by their crews when they ran out of fuel.

The body of the "Tiger" P had armor with a maximum thickness of 100 mm in the frontal part. The driver sat in front on the left, on the right was the radio operator-machine gunner. The turret had a welded structure with a maximum armor thickness of 110 mm at the front; it housed the commander, the gunner on the left, and the loader on the right. The engine compartment was at the rear of the hull. The main armament included a long-barreled 88 mm KUK 43 cannon (barrel length 71 calibers), whose armor-piercing shells pierced 200 mm thick armor at a distance of 1000 m. A `7.92 mm MS 34 machine gun synchronized with the cannon was installed in the turret, and another machine gun was mounted in front of the hull.

On the basis of the tank "Royal Tiger", a tank destroyer "Jagdtigr", armed with a 128-mm cannon, a command tank with an additional radio station, and a repair and evacuation tank were developed. Some of the tanks were released with equipment that allows them to overcome water obstacles along the bottom. A total of 485 Royal ' | tigers."

Characteristics of R2Kre UII Tiveg P Aizyo V: crew - 5 people, weight - 69.7 tons, length (with gun) - 10.26 m, hull length - 7.26 m, width - 3.75 m, height - 3.09 m, power plant - Maubazh NG engine, 230 RZO with a capacity of 700 liters. With. (522 kW), maximum speed on the road - 38 km / h, cruising range on the road - 110 km, armament - one 88-mm cannon and two 7.92-mm machine guns, armor thickness - 100 mm (hull forehead) and 110 mm (forehead of the tower).

Maos

In 1941, Kgirr received an order to develop a super-heavy tank. At the first stage of the work, various variants of the machine weighing 110, 130, 150 and 170 tons were studied.

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Initially, these works were titled Mattiÿ (“Mammoth”), but then, for reasons of secrecy, the works were given the designation Matsÿ (“Mouse”). None of the considered options went beyond the design board, and as a result, the company came to the conclusion that it was most realistic to develop a 70-ton tank.

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In May 1942, Hitler considered Kgirr's reduction in tank weight to 70 tons a wrong decision and demanded that the development of super-heavy tanks be carried out even more intensively, and the weight of the tank should be increased to 120 tons. He believed that the heaviest armor and powerful gun more important than speed. On Hitler's orders, Rogersche also began the development of a 100-ton tank, called Rotsche-Mats (Project 205).

In December 1942, Professor Porsche and Dr. Müller of the Ktarr firm reported to Hitler on the state of preparatory work for the production of the Maiz tank. It was supposed to build 150 tanks with a production rate of five vehicles per month, production was to be deployed at the Krupp plants. However, in January 1943, Hitler decided in favor of launching Rogersse-Maise after comparing competing designs from Krupp and Porsche. A 128-mm cannon was chosen for the tank, and already on May 1, Hitler was shown a wooden model of the Matzs tank. The construction of the prototype has begun | August at the Alkett plant in Berlin, during the construction of the machine, Krupp manufactured the hull and armor, Daimler-Benz - the propulsion system, Siemens - the transmission.

F. Porsche planned to install an air-cooled diesel engine of his own design on the tank, which was not yet ready by that time. Therefore, in August 1943, they began assembling the Roger-Maos prototype with a Daimler-Benz engine. After the first prototype was already under construction, the calculated weight of the tank was increased to 150 tons, this was primarily due to Hitler's repeated desires to install even more powerful armor, which finally reached a thickness of 240 mm. But the weight in the process of construction increased even more and reached 188 tons. In order for this monster to move (and it looked more like a mobile bunker than a tank), many difficult technical problems had to be solved. Professor Porsche and his team did a pretty good job, their giant was slow (20 km/h) but agile enough for its size.

The power plant was traditional for Porsche, it was already used in its earlier projects - UK 3001. (P), UK 4501 (P), UK 4502 (P). Twelve-cylinder engine PB 509 with a volume of 44.51 liters and a power of 1080 liters: p. at

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drove an electric generator. The power produced by the generator was used by two electric motors (one for each track) that drove the tank. The main armament consisted of a 128 mm anti-aircraft gun and a 75 mm 1/44 KzhK gun. For defense, the MS 31 machine gun was used. There was an additional one in the rear of the turret. a spherical embrasure through which it was possible to shoot from a machine gun or machine gun. The thickness of the armor was - 200-240. mm front, 180-200 mm sides 160-200 mm rear. The fuel tank had a capacity of 3200 liters, in the rear of the hull there was an additional tank for 1000 liters. Cruising on the road was supposed to be 185 km. The chassis was 9.034 m long, with twelve double rollers on each side. The crew of the tank consisted of six people. To overcome water obstacles, the tank was supposed to be equipped with equipment for underwater driving. In this case, the electric power for the engines had to be transmitted via cable from a car with an electric generator standing on the shore. · Sea trials of the first sample began at the end of December 1943, and instead of the turret, a ballast was installed: equivalent to its weight with guns. The combat tower was mon-. was tested on the first tank only in June 1944; For transporting the tank, the Ota7-Zipteppr-Rachkeg company (Vienna) developed an ali- nal platform 14-7902209: · . ; The current samples of "Mes" were tested in r

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sdorf and at the training ground in Böblingen. In the last weeks of the war, the first model with a model tower was captured by Soviet troops at the artillery range in Kummersdorf, it was blown up by the Germans during the retreat, the second model with the installed tower was sent to defend Berlin, but broke down near Zossen. It was also blown up by its crew to prevent the Soviets from capturing the tank. By order of the Soviet command, one vehicle was assembled from two samples (the hull from the M1 and the turret from the U2) and in early May 1946 it was transported for testing. in USSR. When further: tests were completed: the tank was transferred to the museum. armored forces: in Kubinka.

393:

Characteristics May5: crew - 6 people, weight - 188 tons, length (with gun) - 10.09 m, width - 3.67 m, height - 3.63 m, track width - 1.1 m, maximum speed on the road - 20 km/h, cruising range on the road - 185 km, armament - one 128-mm cannon, one 75-mm cannon and two 7.92-mm machine guns, armor thickness - 200 mm (front of the hull) and 240 mm (forehead of the tower).

E 100

At the beginning of 1943, the armaments department (NegezmaNepat y adopted the concept of developing new types of armored vehicles, which should have had no shortcomings of previous developments. Night vision devices, the same as on the latest Rap eg models, must be installed on new tanks. The development of the Epimiskiipe (or simply "E") program was started to study some aspects of the development of armored vehicles, but with the involvement of firms that had not previously been involved in the design of tanks.

In total, six main models of this series were planned: E 5, E 10, E 25, E 50, E 75 and E 100, the number in the designation indicated the weight of each tank in tons. But it was clear from the beginning that these weight classifications would be exceeded. The plan included those firms that were not then engaged in the production of large-scale production, but which, in cooperation with other firms, were capable of creating new tanks. Among these firms were: Adeg, Agviv, Atsyu-Opyup, Mesethyiÿe and Kloskpeg-Nshtprboÿa - Pesh 2. They were instructed to develop projects, respectively, in the weight categories up to 10, 25, 50, 75 and 100t.

The E 5 was intended from the outset as a liaison, reconnaissance or light personal transport.
Type E 10, developed by K! Oskpeg-Nitroja! - Resh 2 in Ulm, was a light multi-purpose tank. The construction of the prototype was interrupted with the end of the war.

Adher was responsible for the development of the E 25, which should. It was used as an assault and reconnaissance tank weighing 25-28 tons. It also received an additional order for the development of a super-heavy tank weighing up to 100 tons. |

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The E 50 was planned to replace the Panther tank, and the E 75 was to be the successor to the Tiger tank. They had a great deal of commonality in design, including hulls, suspension, and turrets. The E 50 was to receive a turret designed for the latest Rap Leg-5ti Ti. The vehicles were supposed to be armed with a 75 mm Kuk 43/170 cannon or an 88 mm KUK 44/157 cannon. Both tanks were supposed to be equipped with a gun stabilizer that would allow them to conduct aimed fire while moving. The E 50 hull was based on the Tyveg P hull, the engine was the Maugas NI 234. It was expected that in the forced version, the engine could produce up to 1200 hp. With.

Outwardly, the E 75 tank was supposed to resemble the E 50. Equally different was thicker armor, as well as 88-mm or 100-mm guns with a barrel length of 100 calibers, which were in development at that time. The maximum expected speed for the E 50 was to be 60 km/h, and for the E 75 - 40 km/h. It was supposed to assemble the E 50 and E 75 on the same assembly line using the same technological equipment.

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Of all these projects, the project of the Adjer E 100 tank made the most progress until the end of the war. The E 100 tank, which was accepted for development by the U! Yepapi department in June 1943, was considered as a competitor to the Maus. Initially, it was supposed to use the 150 mm KzhK44 138 gun as the main gun, but then it was proposed to install a more powerful 170 mm KmK 44 gun. tanks. Nevertheless, even after the ban, a small brigade of AG employees continued to assemble the prototype and completed it by the end of the war at a small Henschel plant near Paderborn. The prototype did not have only a turret, which was supposed to be identical to the turret of the Maus tank. For initial tests, the Maugas NI230R30 engine from the Tiger P was adapted. In the series, it was supposed to install the Maubas NT.

`blowing replacement with a Ransheg-Wept diesel engine, which developed a power of 1000 liters. With.

The armor of the E 100 tank was designed to withstand

I will take away any tank of that time. On the tower, its thickness varies

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from 200 mm on the sides and in the back to 240 mm in the front. The armor on the hull varied from 200 mm in front to 180 mm on the sides and 150 mm in the rear. The upper part of the hull was protected by the same 40 , mm armor as the top of the turret.

A prototype of the E 100 tank without a turret and without an engine was found by the British in Haustenbeck. After installing the engine and gearbox, the tank was transported to England for study. |

Characteristics of E 100: crew - 6 people, weight - 151.6 tons, length - 8.7 m, length (with gun) - 10.3 m, width - 4.48 m, height - 3.32 m, width caterpillars - 1.1 m, engine power - 700 hp. With. (522 kW), maximum speed on the road — 40 km/h, cruising range on the road — 120 km, armament (prototype) — one 150 mm cannon, one 75 mm cannon and four 7.92 mm machine gun, armor thickness - 200 mm (hull forehead) and 240 mm (turret forehead).

RxKrÿi MI Tome

The development of this super-heavy tank began already in 1941, when the Kgarr company was studying super-heavy Soviet tanks. In November 1941, it was determined that the new tank should have 140 mm front armor and 100 mm side armor. The crew was to consist of five people. three in the turret and two in the hull. This new tank, equipped with a 1000 hp Oashcheg-Ven2 engine. With.; was supposed to have a top speed of about 44 km/h. The weight of the tank was supposed to be increased to 90 tons. At the beginning of 1942, Kgarr was ordered to design a new super-heavy tank under the designation ÿÿÿÿÿÿ UP Go\e (“Lion”) (UK7201). The tank was to use Tiger II components to make it easier to manufacture and operate.

As part of this project, the developers planned to create two versions of the tank with smooth lines and a turret located at the rear. The light variant (ÿÿÿÿÿÿÿ) had 100 mm armor in front and weighed 76 tons, and the heavy variant (5ÿÿ\ÿÿÿ) had 120 mm armor in front and weighed 90 tons. Both variants were to be armed with 105 mm KUK 1./70 gun and coaxial machine gun, crew on both sides. options. consisted of five people: The maximum speed was 23 km / h for 5sÿmega Gozhe:: and 27 km / h for GesSche Gothe. However, Hitler ordered

stop designing the Iéicie Gome variant and focus on the development of the Zuciege Go\e for a new technical task.

The developers were instructed to redesign the 5bezhuete Go\e for a 150 mm gun with a simultaneous increase in frontal armor to 140 mm. To improve the characteristics of the tank, it was supposed to be equipped with caterpillars 900–1000 mm wide, and its maximum speed was to be increased to 30 km/h. It was planned that Gome would eventually replace

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"Tiger" P, but at the end of 1942 | this project, having never reached the stage of building a prototype, was canceled in favor of the development of the Masha tank.

Characteristics of R2Krem UP To\e: crew - 5 people, weight - 90 tons, length - 7.7 m, width - 3.8 m, height - 3.1 m, track width - 1 m, engine power Mauÿasÿ NG, 230ÿ 30 - 800 l. With. (597 kW), maximum road speed — 30 km/h, armament — one 88 mm KMK 1/71 cannon, one 75 mm Kuk 1/37 cannon, armor thickness — 140 mm (front of the hull) and 140 mm (forehead of the tower).

Van

In June 1942, the Kharr firm presented Hitler with an outline design for a 1,000-ton tank. On December 3, 1942, Hitler discussed this project with Speer, after which the project received the designation Kaye ("Rat"). A turret with two 28 cm 5KS / 28 guns was mounted on a 35 m long chassis. |

As ammunition used in the vein, Raphegzrtepa-rgapaje shells with a length of 1260 mm and a weight of 330 kg, which contained 8.1 kg of explosive, were used. The explosive weight (17.1 kg) was higher for 315 kg high-explosive projectiles. At the maximum elevation angle of the barrel, the firing range could be 42.5 km. An anti-aircraft gun of 20 mm caliber was to be mounted at the rear of the tank. The tank had the following overall dimensions: length (with guns) - 39 m, width - 14 m and height - 11 m. l; With. th until the end of the war, the project was not implemented. JI 5

307.

Draft designs of German armored vehicles

The German documentation captured by the Allies contained sketches of promising tanks with the designations P2Krem USh, PxKr IX and P#KreNo X. There is no data on these projects, only the characteristic (tortoise-like) shape of the tanks can be noted.

A draft design of a 1500-ton self-propelled unit with an 80-cm Shota gun was also developed. As an additional armament, it was provided with two turrets with a 15-cm cannon in each. The power plant of such a self-propelled gun consisted of four diesel engines used in submarines.

Japanese tanks

In 1939, the Japanese developed a project for a super-heavy tank under the designation "O-I" (type 100), the project was carried out in two versions. In the first version, the tank had three longitudinally located turrets and weighed 120 tons. The engine was located in the rear compartment of the hull, and the transmission was located in the front compartment. The main turret carried a 105 mm cannon and two 7.7 mm machine guns, while the small turrets each carried a 37 mm cannon. It was 10 m long, 4.2 m wide with an overall height of 4 m. The thickness of the armor reached 200 mm. The tank had a top speed of 25 km/h and was driven by a crew of 11. The first version of the tank had two petrol engines with a capacity of 550 hp each. With.

In another variant, the O-I tank had both small turrets in the front, and the main armament was a long-barreled 100-mm and 47-mm guns. The power group consisted of two VMU / 550 hp engines. With. The armored undercarriage included 10 dual track rollers and wide tracks. The only copy of the tank "O-I" was made just before the end of the war and sent to Manchuria.

17. FLYING TANKS

Flying tank Christie

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At the end of the 20s. the idea of transferring tanks by air was born, and then the idea of creating flying tanks. At that time, it seemed that they would undoubtedly be applied in one form or another in the face of the deteriorating situation in the world. Here is how the American designer W. Christie painted a picture of the future use of flying tanks: “The battle is in full swing. Something appears on the horizon that looks like a squadron of attacking aircraft. It suddenly becomes clear: the slowly descending vehicles are nothing more than armored tanks equipped with wings. They drop to the ground. The wings are dropped, and a squadron of 4-ton tanks goes on the attack, sowing death all around.

In the United States, the development of a flying tank under the leadership of W. Christie began already in 1932. A tank weighing 5 tons was equipped with a biplane box, to which a cruciform tail was attached to two tubular beams. A propeller with a gearbox was installed on the leading edge of the upper plane. When taking off, the tank accelerated for the first 70-80 m as usual, on tracks, then the driver (he is also a pilot) switched the engine drive to the propeller, after which, after running another 90-100 m, the tank took off from the ground. The flying tank landed on a tracked chassis with all wheels. equipped with independent suspension with a large stroke in the vertical direction. This allowed the tank to land directly on the battlefield. After

landing during

The pilot-pilot, using a special lever, dropped the wing with the tail unit. However, the problem of switching the drive from caterpillars to the propeller and vice versa turned out to be the most difficult task, so after one prototype was built and ten more samples without wings and tail, all work on the project was stopped.

At the end of 1941 OKB O.K. Antonova received an assignment to develop a tank glider, which was intended to equip partisan detachments and sabotage groups. The delivery of the device, which had the designations A-40, KT (“Wings of the tank”) or A-T, to its destination was to be carried out with the help of a towing aircraft.

Structurally, the A-40 looked like a Christie flying tank, the biplane wing box was attached to the hull. tank. tail. The empennage, also of a biplane type: with spaced keels, was attached to the wing box with the help of two beams: the control of the rudders and ailerons of the glider was carried out in the tank, the glider control stick and pedals were added to the usual tank equipment. to control the rudders. Installed on the dashboard. vili compass, speed indicator and altimeter. The tank driver, who is also a pilot, flew the glider not through a narrow viewing slot of the tank, but through: a special optical

" device. The lock for attaching the towing cable was placed on the tank. During the flight: the tank turret turned back with a cannon to reduce air resistance. After landing, the driver, by turning the handle located in the cockpit on the right, disconnected the airframe control wiring, dropped the wings, and the tank could immediately go into battle.

The tests, in which the T-60 tank participated, began on August 7, 1942 at the Flight Research Institute (LII) near Moscow. Initially, they practiced running on the ground in order to assess the strength of the tank tracks: when driving in take-off or landing modes. The test pilot was S.N. Anokhin, glider towing wire-:

was carried out with the help of the TB-3 bomber. After a few days of testing on the ground, permission was obtained for the first flight. The flight mission involved flying in a circle on

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in tow at an altitude of 1500 m, uncoupling the glider on the second lap and performing autonomous gliding.

The first flight of the CT took place on September 2, 1942, towing was carried out at a speed of 130 km/h. But due to the fact that the tank did not yet have a fairing, towing was carried out at the maximum power of the engines of the TB-3 aircraft, from which they. started to overheat. In this situation, the pilot of the tug aircraft P.A. Eremeev decided to unhook the CT in the area of the nearby airfield Bykovo. Anokhin safely landed the CT, started the engine of the tank and, without dropping its wings, slowly moved towards the command post of the airfield. The airfield flight director, who was not warned by anyone, saw an unusual device, raised security on combat alert, and the test pilot who got out of the car was detained. The incident was resolved with the arrival of the LII rescue team, after which the tank returned under its own power to the village of Stakhanovo (now the city of Zhukovsky) to the LII airfield. On the whole, the flight was successful, and the idea of airlifting the tank turned out to be fully feasible.

To continue the test program, more was required: a powerful Pe-8 tug, but they were all occupied. in combat operations, and tow a winged tank

'was nothing. Soon the flying tank program was terminated. e+

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Characteristics of the A-40: wingspan 18 m and their area - 85.8 m?, airframe length - 12.06 m, empty weight - 2004 kg, takeoff weight with the T-60 tank - 7804 kg, takeoff speed - 160 km / h, landing speed - 110 km / h.

Characteristics of the T-60: crew - 2 people, weight - 6.4 tons, length - 4.1 m, width - 2.3 m, height - 1.75 m, GAZ-202 engine power - 70 hp. With. (52.2 kW), maximum speed on the road - 42 km/h, armament - one 20-mm TNSh-20 cannon and one 7.62-mm machine gun, armor thickness - 35 mm (hull forehead) and 25 mm (forehead of the tower).

18. FLAME THANKS

Flamethrowers first appeared in modern form during the First World War. They were intended to destroy enemy personnel with a burning mixture, set fire to tanks, vehicles and material reserves, as well as for sabotage purposes. Despite protests from all warring parties, flamethrowers quickly became standard military weapons, and by the time World War II broke out. During the war, most armies either had flamethrowers (both light and heavy) in service or intended to be equipped with them.

Structurally, a lightweight (knapsack) flamethrower consists of a tank for fire mixture, a cylinder for compressed gas, a reducer, a flexible hose connecting the tank with a hose gun, a hose gun and carrying equipment. A heavy flamethrower is similar in principle to a light flamethrower, but mounted on a vehicle or tank (flamethrower tanks).

OT-26

In 1933, the OT-26 flamethrower tank was created in the Soviet Union on the basis of the twin-turreted T-26 tank. At the same time, the left turret was dismantled, and flamethrower equipment was placed in the hull under it - a tank for a fire mixture of 360 liters, three compressed air cylinders of 150 atmospheres, a gasoline tank with a capacity of 0.7 liters and an ignition system. A pneumatic type flamethrower and a machine gun were installed in the right turret. The flame throwing range was 35 m, except for fire

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meta, the tank was equipped with a smoke release system for setting curtains.

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Characteristics of OT-26: crew - 2 people, weight - 9 tons, length - 4.65 m, width - 2.44 m, height - 2.33 m, engine power - 90 hp. With. (67 kW), maximum speed along the road - 38 km/h, cruising range on the road - 170 km, armament - one KS-25 flamethrower and one 7.62 mm DT machine gun.

OT-130

The OT-130 flamethrower tank was created in 1936 on the basis of the single-turret T-26 tank. The tower was shifted to the right relative to the longitudinal axis of the tank, to the left of it there were two tanks for fire mixture with a total capacity of 400 liters. The range of flamethrowing on a mixture of fuel oil with kerosene was 50 m, the number of one-second shots was 40. In one shot, 9 liters of fire mixture were thrown out, which was ignited from a torch of burning gasoline, and gasoline from an electric spark plug. OT-130 was first used in August 1939 against the Japanese at Khalkhin Gol. The mass of the tank is 10 tons, the crew is two people. ·.

In 1938-1940. On the basis of the T-26S tank, new modifications of flamethrower tanks appeared: OT-131, OT-132, OT-133, OT-134. The OT-133 tank weighed 10.5 tons and was equipped with two machine guns in addition to the flamethrower. In the OT-134 tank, the weight increased to 10.8 tons, the crew consisted of three people, in addition to the flamethrower, the tank carried a 45-mm cannon and two DT machine guns as weapons. Flamethrower equipment was located in the hull of the tank, the capacity of the tanks with fire mixture was 140 l. A pneumatic type flamethrower was installed in a ball bearing in the frontal plate of the turret box, the flame throwing range reached 50 m. In total, about 1336 flamethrower tanks based on the T-26 tank were produced in the Soviet Union in the prewar years.

OT-7

The OT-7 flamethrower tank was created in 1939 on the basis of the BT-7M tank. The main weapon of the tank was a 45 mm tank gun paired with a 7; 62 mm DT machine gun; The second DT machine gun, anti-aircraft; mounted in the turret on the roof of the tower: In ka-:

314.

As an additional weapon, the KS-63 flamethrower installation was used, the hose of which was installed. in a ball joint in the front part of the turret roof. The crew of the car consisted of three people.

The flame thrower had two tanks for fire mixture with a capacity of 85 liters each, the tanks were installed outside the tank of three 13-, on the fenders. The pneumatic system consisted of: liter compressed air cylinders, two reduction gears, two pipelines and a control valve. Air from the low-pressure line (8-10 atmospheres) during flamethrowing ejected a jet of gasoline through the nozzle, which was ignited by an electric spark plug. Air from the high-pressure line (20–25 atmospheres) during flame throwing opened the valve of the hose nozzle and threw out a jet of fire mixture. ignition

fire mixture was produced by a gasoline torch,

The capacity of a fire shot was 8-12 liters, the number of shots was 10-15. The practical rate of fire reached 10 shots per minute, the range of flamethrowing was 70 m. The disadvantages of the tank included the difficulty of flamethrowing, since it required the driver to be distracted from performing his main functions. However, the car was not accepted for delivery.

In 1936-1940. On OT-7 tanks, almost all experimental powder flamethrowers were tested, in which the release of: fire mixture through the nozzle was carried out under the pressure of powder gases flowing from a special 45-mm cartridge. The ignition of the fire mixture ejected from the nozzle took place. from a torch of gasoline ignited by an electric spark created by glow plugs. The flamethrower was reloaded automatically. The flamethrower of factory No. 174 was recognized as the best.

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brand ATO-41 was adopted for flamethrower tanks developed on the basis of the T-34 and KV-1 tanks.

OT-34/0T-34-85

Flamethrower tank.OT-34 was created on the base. linear; of the T-34 tank, produced in 1942, by installing the powder flamethrower ATO-41 or ATO-42 in the frontal hull plate: Distance:

315:

the flamethrowing range reached 90-100 m, the rate of fire from the flamethrower was 3 shots per 10 seconds with a fire mixture reserve of 100 l. A total of 1,170 OT-34 tanks were produced, which from the beginning of 1944 were replaced by OT-34-85 flamethrower tanks.

The OT-34-85 tank, created on the basis of a modification of the T-34-85 line tank, was equipped with an ATO-42 automatic powder flamethrower installed instead of a machine gun in the front hull plate. The stock of fire mixture increased to 200 liters. A total of 35 instances of OT-34-85 were produced before the end of the war.

Characteristics of OT-34: crew - 4 people, weight - 31 tons, length - 6.1 m, width - 3.0 m, height - 2.6 m, engine power - 500 hp. With. (373 kW), maximum speed on the road — 54 km/h, cruising range on the road — 465 km, armament — one 76.2 mm F-34 cannon, one ATO-41 (ATO-42) flamethrower and one 7.62 mm machine gun DTM.

Characteristics of OT-34-85: crew - 5 people, weight - 32 tons, length - 6.1 m, width - 3 m, height - 2.743 m, engine power - 500 hp. With. (373 kW), maximum speed on the road - 55 km/h, cruising range on the road - 350 km, armament - one 85 mm ZIS-S-53 gun, one ATO-42 flamethrower and one 7.62 mm machine gun DTM.

KV-8-

The production of the KV-8 heavy flamethrower tank began in 1942 on the basis of the KV-1 line tank. It was equipped with an ATO-41 powder flamethrower installed in the turret instead of a machine gun coaxial with the cannon. The range of flame throwing reached 100 m, the stock of fire mixture was 670 liters. Later, an ATO-42 flamethrower was installed with a fire mixture reserve of 900 liters.

With the advent of the KV-1s tanks, its flamethrower modification appeared, which had the designation KV-8s.

Characteristics of the KV-8: crew - 4 people, weight - 47 tons, length - 6.75 m, width - 3.32 m, height - 2.71 m, engine power - 600 hp. With. (448 kW), maximum speed on the road - 35 km/h, cruising range on the road - 250 km, armament - one 45-mm cannon model 1932-1938 tenge, one ATO-41 flamethrower and four 7, 62mm DT machine gun.

316

Nattrapheg

The first serial flamethrower tank under the designation Natliraiteg I appeared among the Germans in 1941 on the basis of the light tank Px Krim I, in which a flamethrower was installed in the turret instead of one of the machine guns. It was used in combat operations of the German corps unit (Yueshÿsÿÿÿ Aÿÿka Kogrÿ) in North Africa. Soon a new flamethrower tank Nattrappeg P appeared, which became a modernization of the tanks RxKrÿu P Apz [0 or E. Eattrapkhet N had two flamethrowers, one on each side in front of the hull, the range of the flamethrower was 36.5 m. - but a small number, almost all of them were used on the Soviet-German front:

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About 100 R2Kru Sh ASh N or M tanks were converted into Eattrapheg Sh by installing a flamethrower instead of the main gun, the stock of fire mixture in the internal tanks was 1000 liters. These flamethrower tanks were very effective, but they were not used in large numbers mainly due to their inability to defend themselves against enemy tanks. Therefore, when they were used in combat, conventional tanks had to cover them.

During 1944, the small Nattraptegg 38(6) entered production, using the squat hull of the Neggg tank destroyer. As flamethrower tanks, the Germans used captured tanks, in particular the French tanks Czar B, ten of which were captured by the Germans in 1940. 251/16 tiler Eaptraptemmavep, began to be used in 1942. The flamethrower carried two tanks with fire mixture, each with a capacity of 700 l, this was enough for 80 torch pulses lasting 2 seconds. Each tank supplied its own flamethrower, both of which were located at the rear of the vehicle, on some modifications an additional third flamethrower was installed at the front of the vehicle.

Characteristics of Nattraptag G; crew - 2 people, weight - 5.4 tons, length - 4.02 m, width - 2.06 m, height - 1.72 m, engine power - 57 hp. With. (42.5 kW), maximum speed on the road - 57 km/h, range on the road -

145 km, armament - one flamethrower and one 7.92-mm machine gun MO 13 or MO 34.

Characteristics of Nattralteg Sh: crew - 5 people, weight - 19.5 tons, length - 5.38 m, width - 2.91 m, height - 2.44 m, engine power - 300 hp. With. (224 kW), maximum speed on the road - 40 km/h, cruising range on the road - 165 km, armament - one flame thrower and three 7.92-mm machine guns MS 34.

American flamethrower tanks

The first American flamethrower tank was produced in 1940, in fact it was the M2 tank, on which the E2 flamethrower was installed. Then a flamethrower tank appeared based on the M3 light tank. However, during the tests, shortcomings in the design of the EZ flamethrower were revealed, after which it was finalized, replacing the air compressor with compressed air cylinders.

At the same time, within the framework of the OshsKe program, work was underway to install the Anglo-Canadian Kopsop flamethrower system on trucks. Project O continued until the system was adapted for the M5A1 light tank, but these tanks were not enough. In fact, only at the beginning of 1945 did a flamethrower tank called the M5-4 appear, a small batch of these tanks first appeared in the Philippines.

At the same time, in military conditions in Hawaii, the Americans, using the Kopsop flamethrower as a basis, began to install them in place of the guns of the MZAT light tanks, this flamethrower tank received the designation Sagapr (“Satan”). "Satan" used compressed carbon dioxide as a displacer, it could fire a fire mixture at a distance of up to 73 m, the stock of fire mixture was 773 liters. A total of 24 Satan tanks were re-equipped; by June 1944 they were already participating in the fighting on Saipan.

The success of "Satan" in the fighting led to the creation of a similar system based on the medium tank M4. Instead of 75-mm guns, Kopsop flamethrowers were installed on them, this new version of the tank was called ROA-SUS "75" HIN - the designation of Hawaii). This type of flamethrower tank later is

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used in Okinawa to smoke out Japanese suicide bombers from deep caves in which they hid, waiting for an opportunity to attack.

From October 1943, work was underway to install a flamethrower system instead of a machine gun in the MZ, MA and M5 tanks, but in such a way that, if necessary, the machine gun could be installed back. As part of these works, 1784 MZ-4-3 flamethrowers were produced for installation in MA tanks and 300 E5K2-MZ flamethrowers in MZ or M5 tanks. Many of these flamethrower tanks were used in Europe and in the Pacific theater of operations. |

Approximately 176 M4 tanks equipped with MIAI portable flamethrowers saw action in Okinawa and Iwo Jima. The M5-4 flamethrower systems were also installed on the GUT-4 landing amphibians. Although these amphibians were used very effectively, their significant drawback was too light armor.

Characteristics of OT based on MOH; crew - 4 people: weight = 12.4 tons, length - 4.53 m, width. - 2.24 m, height - 2.52 m, engine power - 250 l. With. (187 kW), max. naya speed on the road - 48 km / h, cruising range on the road - 113 km, armament - one flamethrower and five Browning machine guns.

Characteristics. OT on the M5 base: crew - 4 people, weight - 15 tons, length - 4.34 m, width - 2.24 m, height - 2.3 m; power plant power - 2 x 110l. With. (82 kW), maximum speed on the road — 58 km/h, cruising range on the road — 161 km, armament — one 37 mm cannon, one flame thrower and two 7.62 mm Browning machine guns.

Statement

In England, the development of the first flamethrower tanks began in 1938, the coordination of work was carried out by the RUO (Reÿgoiesht Vagtage Oeragitepe - military oil department). As a result, the Stosode (“Crocodile”) flamethrower tank was created, in which compressed hydrogen was used to eject a jet of burning mixture. In the original version, the "Crocodile" was the corresponding model of the infantry tank Sÿiteÿ MKÿU, : :

319.

In August 1943, an order was issued for the construction of 250 flamethrower tanks, which were to take part in the planned landing of the Allied troops in Normandy. However, in the final version, most of the produced flamethrowers were installed on tanks of the MK UP modification. The main part of the flamethrower system was installed on a two-wheeled cart towed behind the tank, the flame mixture was fed into the tank through a pipeline. The hose was installed in front of the tank instead of a machine gun. The main 75-mm cannon and machine-gun turret were retained so that, if necessary, the vehicle could be used as a battle tank. The trolley contained a sufficient amount of fire mixture and compressed gas, this was enough to produce 80 one-second portions of flame, the usual range of the jet was 73 m, although under favorable conditions it could reach 110 m. - whether from the tank.

"Crocodile" first took part in the hostilities on June 6, 1944, after which it was used in all theaters of military operations. Soon, 6 Crocodiles were built on the basis of the Sherman tank, which was in service with the US Army, of which 4 vehicles were used in combat conditions in Europe. In total, before the end of the war, 800 Crocodile flamethrower tanks were produced, most of which were in service with the 79th armored division of the British army.

M/a5r

In September 1942, the RUO issued an order for the manufacture of 1000 flamethrower tankettes under the designation UMazr (“Osa”) MKG, by November of the following year all the machines were delivered. The Wasp used a large hose that connected to two tanks inside the hull.

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wedges. However, they turned out to be unreliable in operation, so a modification of the Mazr MK P soon appeared, in which a smaller flamethrower was installed in front instead of a machine gun. The flamethrower in MK P had better flame parameters, it was easier to aim from it and much safer to work with it.

320

Not

ÿi 870-3 for transporting saboteurs

PSN-2

PSN

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"Shinryu" (project 1945)

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B I A "Dolphin" (large), variant

Type A

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"Kojo" (type 0)

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"M-Kanamono"

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"Kanumono"

MTUMA

SV 6 (first series)

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SA 2 (first version)

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SV 20 (second series)

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Platform for the transportation of "Maus"

The project of the super-heavy tank T-42

QMS

Sled for transporting infantry

Danish motorcycle "Harley-Davidson", captured by the Germans

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K 12(E)

Theododog Vgopo

I just.

Shuyege Vgipo

1 April Vhypo

Metse Vgipo

Horns

Japanese body armor, type 11 Japanese body armor, type W

n

"Fukurko"

mA

Dog-saboteur Dog - tank destroyer

Separate-tailed bombardi mice - corresponding to the modern ex- terrier

The Mazr MK P was used for the first time during the Normandy landings in July 1944. They were used mainly in support of infantry operations, given that the StosodPe was used to support armored formations.

In 1943, the Canadian version of the Mazr MK PS appeared, which instead of two tanks was supplied with one with a capacity of 341 liters. This made it possible to place a third crew member in the tankette, who was armed with a light machine gun or a light mortar. This gave the Canadian "Osa" much more tactical flexibility, so in June 1944 all production switched to the production of the MK PS standard, and in the field, the British two-seat MK I, which were already in operation, were modernized.

13-354

The Italian model 35 flamethrower (Hapsaÿatte todeÿo 35) entered service in 1935, just at the time of the Italian invasion of Abyssinia. There, this flamethrower earned a reputation as an effective weapon. It was a portable knapsack equipment with two tanks and a rather bulky hose, at the end of which an igniter was placed. Soon a more advanced model 40 flamethrower appeared. Model 35 and 40 flamethrowers were used by special assault units (Ciatrogy). Since the range of action of flamethrowers left much to be desired (a little over 20 m), the Ciasiogi during the conduct of hostilities were usually guarded by infantry units.

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Flamethrower equipment was transported on special sights behind trucks or, if the unit was not mechanized, mules were used, the fire mixture was carried in specially marked metal canisters. Flamethrowers were used in some quantities by Italian troops in North Africa and on the Soviet-German front. After the successful use of flamethrowers in Ethiopia, the Italian military adapted a special version of the flamethrower on a small tankette E3-3514. Since the space inside the hull of this vehicle was very limited, a stock of fire mixture of 500 liters was carried in a lightly armored

a trailer with a corrugated pipe supplying fire mixture to the hose from the trailer. A compressed gas cylinder with a capacity of 60 liters was located at the rear of the wedge body. Later, they began to use a version of the flamethrower tankette, which did without a trailer, it carried a flat tank for the fire mixture on top at the rear of the tankette. The flame throwing range of the tankette was 100 m.

Characteristics of the tankette 1.3-351 4: crew - 2 people, weight - 3.2 tons, length - 3.2 m, width - 1.4 m, height - 1.28 m, engine power - 43 hp. With. (32 kW), maximum speed on the road - 42 km/h, cruising range on the road - 120 km, armament - one flame thrower, one 6.5 mm machine gun and two 8 mm EIAT machine guns.

Flamethrower tank type 98

The Japanese army and navy made extensive use of light flamethrowers from the very beginning of the war. These were flamethrowers - type 93 of the 1933 issue, in the development of which the German experience of the First World War was used, and type 100 of the 1940 issue. The first allies encountered a specialized unit of these flamethrower tanks in 1944. The tanks had a flamethrower installed in the turret instead of a 37 mm cannon, and only one machine gun was available from additional armament. . The total number of built in 1942-1943. tanks type 98 amounted to 22 copies.

Characteristics of the tank type 98 ("Ke-Ni"): crew - 3 people, weight - 7.2 tons, length - 4.11 m, width - 2.12 m, height - 1.82 m, power engine - 130 l. With. (97 kW), maximum speed on the road - 50 km/h, cruising range on the road - 300 km, armament - one flamethrower and one 7.7-mm machine gun type 97.

19. COMBAT UNDERGROUND FACILITIES

Miadaga-5ÿhapde

In 1934, a project was developed for an underground LETE facility called Miyvaga-$skapge (“Midgard Serpent”). The engineer Ritter's team working on the project used this name from ancient Germanic mythology, probably to arouse Hitler's particular interest. Midgard was a huge serpent that Thor, the god of thunder, fought with. When designing, they proceeded from the fact that to create a vehicle that could move on the ground, underground and even under water at a depth of up to 100 m. It had to carry a large amount of explosives, which were supposed to be installed under the fortification

, cationic structures of the Maginot Line or in enemy harbors.

The vehicle, the first developments of which date back to the summer of 1934, consisted of a large number of cells-compartments connected together. Each compartment was 6 m long, 6.8 m wide and 3.5 m high. Depending on the task, the minimum length of such a train could be 399 m, the maximum length 524 m.

In front was a large drill head, the same as those used in the mining industry for underground work, on which were located four

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a drill with a diameter of 1.5 m. To drive the head, nine electric motors with a total power of about 9000 hp were provided. With. In addition, there were three more sets of drills, which were replaced depending on the properties of the rock. The undercarriage of the train, made on tracks,

served 14 electric motors with a total capacity of 19,800 hp. s., the electric current for the engines was generated using four diesel generators with a capacity of 10,000 liters. with., for which there were fuel tanks with a capacity of 960 cubic meters. Movement under water was carried out with the help of twelve pairs of rudders and additional twelve engines with a total capacity of 3000 hp. With.

As armament, "Midgard" carried a thousand 250-kg mines, a thousand 10-kg mini 12 coaxial MO machine guns. The vehicle weighed 60,000 tons, the crew was 30 people. On board were: an electric kitchen, a bedroom with 20 beds, three repair shops, several periscopes, a radio transmitter, and 580 large compressed air tanks. Later, additional underground facilities were developed for the "Midgard" - Eagnir, Moshi, A]begis and Gaigin.

Eappit (in the Germanic sagas – a dragon) was an underground torpedo 6 m long. Abeps was a reconnaissance torpedo that carried microphones and a periscope. With the help of a small vehicle ÿ ÿÿÿÿÿ the crew of "Midgard" could leave their train and come out from under the ground to the surface. The design parameters of the Midgard were fantastic: the maximum speed on the ground was 30 km/h, the speed of penetration in rocky soil was 2 km/h, and in soft soil even 10 km/h, under water 3 km/h.

Ritter, in an explanatory note to the project, proposed the construction of 20 Midgards worth 30 million Reichsmarks each, this was necessary to implement the plan of attack on strategic targets in Belgium and France, as well as to mine English ports. According to the proposed plan, 15 enemy ports were to be blown up three hours after the start of hostilities. Demoralized by these events, the population of the as yet unoccupied areas in a panic stopped supporting their government or went on to civil war. The author called "Midgard" a weapon of mass destruction, which will lead to the fact that "a desperate people will face a choice - to die or stay alive." Ritter's project caused a lot of criticism from the

socialists. For example, Colonel Wietinghoff, head of department at the Ministry of Armaments, wrote the following remark on the project folder: “The proposed design is not new in itself, but there are no calculated justifications in the documentation.” Therefore, on February 28, 1935, the project was returned to engineer Ritter.

Whether Ritter finalized his project or not, there is no information on this subject in the literature. However, after the end of the war in the area of Koenigsberg, adits of unknown purpose were found, and near them the remains of an exploded device of unknown design. Recently, in the Russian media, reports began to appear about attempts to develop such an underground facility in the USSR. From these reports it follows that in the fall of 1964 an underground cruiser was tested under the name "Battle Mole", however, neither specific characteristics nor descriptions of the design of this vehicle are given.

Mee

Machines that are close in purpose to the German Midtar du ”were also developed in England. They were designated as ME (Mama! Gapa Eashrtel! - naval and land equipment) and were designed to dig passages through enemy positions. Supporter of the development

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such machines were W. Churchill, who ordered to build by the beginning of 1940 (the time of the alleged German invasion) a batch of 200 machines.

The construction of the French Maginot Line and the German Siegfried Line led to the false assumption that any conflicts would again lead to trench warfare. Mindful of the terrible loss of life in the trenches of 1914-1918, Churchill wanted to equip British troops with diggers that could dig large trenches or tunnels through no man's land under cover of darkness and under the roar of artillery cannonade. Through dug trenches, tanks and infantry were to penetrate enemy territory and suddenly attack the enemy.

The developers of the MGE had several names: MeShe ("Nelli"), Mo tap 5 Gapa Exauayug ("Excavator without the participation

Man"), as well as Sshiuarog 6 ("Cultivator b") or Une Kabyk 6 ("White Rabbit b"), which masked his military appointment. Initially, it was planned to produce 20 cars per week and 40 engines for them. In its final form, the Nelly was 23.47 m long, 1.98 m wide, 2.44 m high and consisted of two sections. The main section, which was mounted on tracks, looked like a very long tank and weighed 100 tons. The front section, which weighed about 30 tons, was capable of digging trenches 1.5 m deep and 2.28 m wide. The excavated soil was carried upwards by conveyors and laid on both sides of the trench, creating dumps about 1 m high. The Nelly could move at a speed of more than 8 km / h, taking out thousands of cubic meters of soil in the process of movement. Upon reaching a predetermined point, the earth-moving machine must stop and turn into a platform for the exit of tracked vehicles moving behind it, for example, tanks, which must climb out of the trench into open space and begin a sudden battle. |

Initially, it was supposed to equip the car with one Ko[5-Kose Met engine with a capacity of 1000 hp. With. However, it turned out that in addition to the risk of fire inherent in a gasoline engine, it can only produce 800 hp. With. under constant load, i.e. less than required to complete the task. Soon, all Meg engines were urgently needed for aviation, so a replacement had to be found. It was recommended to use two Rakhtap 12TP engines with a power of 600 hp each. with., which required a complete redesign of the Nelly. One motor was to drive the cutter and conveyors at the front of the machine, while the second motor was used to propel the machine itself.

But after the fall of France, the Nelly project was terminated. Large-scale production of Rakhtap 12TR engines for the Nelly was curtailed, and all manufactured engines were transferred to the Admiralty. Field tests of the experimental machine began in June 1941, but in 1943 · the project was stopped. Only five of the small versions of the Nelly had been completed by that time. Four cars were dismantled at the end of the war, and the fifth car was dismantled in the early 50s.

20. RAILWAY GUN

_ The idea to use railway trains armed with artillery mounts,
appeared in England in the first half of the nineteenth century. The first combat use took place in March-April 1865 during the American Civil War, when a 320 mm mortar was mounted on a railway platform and used with significant success during the capture of the Confederate capital of Richmond. In the early 1880s. the French made the first attempts to create railway artillery installations for the defense of fortresses. In 1910, the French company Schneider built a 200-mm howitzer for Peru, placed on a turntable of a railway platform, the gun had a circular horizontal fire.

However, the greatest impetus to the development of railway artillery was given by the First World War, which soon took on a positional character. To break through a well-fortified enemy defense

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powerful heavy guns were required, also possessing sufficient mobility. In October 1914, the French government formed a special commission responsible for the creation of railway weapons. The result of the activities of this commission was the appearance at the front in May of the following year, eight railway guns of the Schneider Creusot company, and a few months later, 400-mm howitzers of the Saint-Chamond company appeared, the firing range of which was 16 km. In large numbers, railway artillery was used by the German army. The Krupp factories created the 17 cm Samuel cannon, the 21 cm Peter Adalbert,

21 cm "Parisian", 28 cm "Bruno" and the heaviest gun 38 cm "Max", which was used at Verdun and Dunkirk.

After the end of the First World War, work on railway guns continued, and the Germans showed particular activity in this direction. With the coming to power in Germany of the Nazis at the Krupp firm, the number of employees in the railway artillery development department grew from 20 to 2,000 people. Large-caliber railway guns were intended for concentrated fire support during the offensive of German troops, as well as for coastal units. In May 1940, the Wehrmacht had 9 batteries of railway artillery under the numbers: 676, 679, 680, 681, 702, 720, 766, 780 and 781. Batteries by fronts were as follows: Eastern Front - southern sector (2 batteries), central sector (5), northern sector (2), Balkans - 1 battery, Western Front - 9 batteries, in the Rügenwalde test center - | battery.

TM-3-12

The project of the TM-3-12 railway artillery mount-transporter was developed in 1934 by the Central Design Bureau of Shipbuilding No. 3 of the Leningrad Metal Plant, after which, by January 1939, three transporters were manufactured in Nikolaev. Each of the transporters was armed with a 305-mm naval gun taken from the battleship Empress Maria, which sank in 1916 off Sevastopol. Of these three transporters, battery No. 9 was formed, which during the Soviet-Finnish war was used to shell the powerful defensive structures of the Mannerheim Line.

After the end of hostilities, in accordance with the decision of the State Defense Committee of the USSR of June 20, 1940, the battery was transferred to the Hanko Peninsula, leased from Finland to create a naval base on it.

° From the beginning of the Great Patriotic War to December 1941, the battery protected the naval base of Baltiysko

then the fleet. Before the base was evacuated from the Hanko Peninsula in December 1941, the guns were brought into a state unsuitable for firing shots. However, within two years, Finnish specialists restored the combat capability of the transporters by installing barrels from the Russian battleship Aleksandr P on them. At the beginning of 1945, the battery was returned to the USSR. The Krasnaya Gorka fort on the coast of the Gulf of Finland became the last position for the TM-3-12 transporters based on the Hanko peninsula.

Characteristics of TM-3-12: weight - 340 tons, barrel caliber - 305 mm, barrel weight - 50.54 tons, projectile weight - 470.9 kg, firing range - 50 km, rate of fire - 2 rounds per minute, combat calculation - 50 people.

TM-1-180

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The TM-1-180 railway artillery transporter was developed in 1935 at the Leningrad Metal Plant. The B-1-P gun of 180 mm caliber was manufactured at the Bolshevik plant in Leningrad.

The installation was intended for firing at sea and land targets directly from railway tracks without specially prepared permanent foundations; a special support beam was provided for this. When firing, the beam relied on the special beams that were available with the conveyor, which were laid on the sleepers of the railway track. For installation in position in a combat position, the beam was equipped with two jacks and special thrust legs (8 pieces). The supply of ammunition was carried out with the help of a shell platform, along the perimeter of which four shell carts with ammunition trays rolled, fed from the cellar cars along the roller conveyors.

Shooting was carried out on a horizontal section of the railway along a circular sector of fire. The transporter had its own engine for moving over short distances - every 3-4 minutes after the end of the shooting, it left the position. In 1941, the USSR was armed with 20 TM-1-180 transporters; they took part in the fighting until the last days of the war.

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Characteristics of TM-1-180: weight - 160 tons, barrel caliber - 180 mm; maximum elevation angle - 50°, horizontal aiming angle - 360°, firing range - 38 km, projectile weight - 97 kg, initial projectile velocity - 920 m/s, conveyor speed - 45 km/h, combat crew - 40 people, transfer time from traveling to combat position - 60 minutes.

TP-1 /TG-1

At the beginning of 1938, the Novokramatorsk Mechanical Plant was issued a technical assignment for the development of the TP-1 railway artillery transporter, and the Barrikady and Krasny Prof-Intern plants also took part in the work. A 356 mm caliber gun with a barrel length of 19.36 m (54.4 calibers) was mounted on a 16-axle conveyor. The gun was supposed to fire four types of projectiles - armor-piercing (projectile weight 750 kg), high-explosive (750 kg), long-range (495 kg) and combined (234.4 kg). An armor-piercing projectile pierced 230 mm armor at a distance of 30 km, and a combined projectile had a range of 120 km.

, In accordance with pre-war plans, it was planned to put into operation 14 TP-1 units, However, by the beginning of the Great Patriotic War, there was only one unfinished installation, and later all work on it was stopped. |

In parallel with the TP-1, the Novokramatorsk Mechanical Plant was developing the TG-1 railway installation for a 500-mm howitzer with a barrel length of 13.85 m (27.7 calibers). Shooting could be carried out with shells of two types - concrete-piercing (2050 kg) and high-explosive (1470 kg). The TG-1 design uses a 16-axle conveyor unified with the TP-1 conveyor. It was planned to have 16 TG-1 installations in service by the end of 1942, but by the summer of 1941 only one installation had been built, and soon all work on the TG-1 was stopped.

Characteristics of TP-1: weight - 360 tons, barrel caliber - 356 mm, maximum elevation angle - 50°, horizontal aiming angle - 360° on a concrete base and

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6° on rails, firing range — high-explosive 49 km, long-range 60 km and combined 120 km, rate of fire — 1.33 rounds per minute, muzzle velocity — 530 m/s, conveyor speed — 50 km / h, the transfer time from traveling to combat is 3 hours. Characteristics of TG-1: weight - 353 tons, barrel caliber - 500 mm, maximum elevation angle - 70°, horizontal aiming angle - 6°, firing range - 25 km high-explosive and 19.5 km concrete-piercing, rate of fire - 0 .5 rounds per minute, muzzle velocity

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projectile - 490 - 580 m / s, conveyor speed - 50 km / h, transfer time from traveling to combat position - 3 hours.

343 mm gun O.E.

During the First World War, the British used four railway transporters with 356 mm guns against the Germans. After the end of the war, the gun barrels were handed over for remelting, while the transporters themselves were preserved. In 1940, the Admiralty handed over three 343-mm naval guns to the land army, which it was decided to install on old transporters. Three transporters equipped with these cannons were stationed in the Dover area, manned by a team from the Royal Naval Siege Regiment and used to bombard German positions in the area of the French port of Calais. A 457-mm howitzer was mounted on the fourth conveyor. This transporter was also stationed near Dover and was used to guard the coast.

O.E. characteristics: weight — 2439 t, barrel caliber — 343 mm, total length — 26.6 m, barrel length — 15.9 m, maximum elevation angle — 40°, horizontal aiming angle — 4 °, firing range - 36.6 km, projectile weight - 567 kg, initial projectile speed - 777 m / s.

305-mm railway howitzer V.I.

During the First World War, England used three versions of the 305 mm railway howitzer. On the first model (MK 1) there was a 12 caliber gun, then

The 17-gauge model MK 2 was launched, the firing range of which increased from 10.2 to 13.7 km. However, this gun could only fire along the railroad tracks with a horizontal aiming angle of no more than 20° in both directions - otherwise, the recoil force would have knocked it off the rails. The third modification of the MK 5 howitzer, created by the Vickers company, had a horizontal aiming angle in both directions of 240". war, in 1939 they were removed from warehouses, modified and began to be used as coastal defense guns on the east coast of England.

Characteristics of V.G. Mk 5: weight - 77.17 tons, barrel caliber - 305 mm, total length - 12.2 m, barrel length - 5.7 m, maximum elevation angle - 45°, horizontal aiming angle - 240°, firing range - 13.1 km, projectile weight - 340 kg, initial projectile speed - 447 m / s.

15-st-K (E) / 17-st-K (E)

In 1933-1934. In Germany, a program for the construction of railway guns of 15 and 17 cm calibers began. Shooting was carried out with naval shells 5grg. 1/41 K = length 610 mm and weight 45.3 kg. The weight of the explosive was 4.5-5.7 kg, the initial projectile velocity of 805 m / s made it possible to reach a range of 22.5 km. Before the start of the war, 18 copies of these heavy guns (weight 74 tons) were produced with ammunition for them in the amount of 4426 shells.

“The 17-st-K (E) gun was mounted on two platforms 6.9 m long each, the barrel of a 172.6 mm naval gun was used. The projectiles were used as projectiles Prer. 1./4.7K; 813 mm long, 62.8 kg in weight and 7.7 kg of explosive. The initial velocity of the projectile was 860 m/s, the firing range was up to 26.1 km. The weight of the 17-st-K (E) gun was 80 tons, six of them were built before the war with 6197 shells for them. Additionally

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There were also 18 coastal stationary guns of this caliber. Of the ammunition in March 1945, there were 1,700 shells available. |

20.3-st-K (E)

The railway gun 20.3-st-K (E) was built in 1936 and operated under this name until 1941. It was a modification of the 5K S / 34 naval gun, which was created for heavy cruisers of the Aitiga class] Nirreg (VTasVeg, Adpiga ! Hirreg, Pgÿph Envep). The gun weighed 86.1 tons, the barrel length was 12.15 m with a total length of the gun 19.44 m. The gun itself weighed 20.7 tons, it was mounted on two 4-axle railway platforms. The gun could be transported along dirt roads on two 6-axle trailers. Circular shelling was carried out from a rounded section of the railway track or from a special turntable Moreje.

For firing, high-explosive shells 5rg were used. [./4.7 is 954 mm long and weighs 122 kg. The projectile, carrying 9 kg of explosive, at an initial velocity of 925 m/s, reached a range of 36.4 km. In total, eight such guns were built, they were considered a very successful improvisation. In 1941, naval guns, as they did not meet the army standard, were replaced by guns of the army caliber 21 cm.

Characteristics of the 20-st 5K S/34: weight - 86.1 tons, barrel caliber - 203 mm, barrel length - 12.15 m, gun length - 19.44 m, maximum elevation angle - 47°, horizontal angle , aiming - 360°, projectile weight - 112/122 kg, muzzle velocity - 925 m/s, firing range - 36.4 km, rate of fire - 30 rounds per hour.

21st K 12 (E)

The firm "Krupp" was given an assignment to develop railway guns of the army caliber 210 mm. The gun, which received the designation 21-st K 12 (E), had a weight of 302 tons, it was mounted on two platforms (10-axle platform in front, 8-axle platform in the back). In a combat position, the gun fired from a rounded railway track or from

the gate table of Moveje. K12 (E) was the most effective long-range gun of the Wehrmacht, but after 90-100 shots with shells weighing 107.5 kg, the barrel had to be bored due to wear and tear.

It was planned to build three K12 (E) guns to bombard England across the English Channel, but only two guns were built due to the fact that the Luftwaffe began to use more advanced bombers. By the end of 1940, these two guns were placed on the French coast and indeed bombarded Dover, Folkestone and partly Kent.

Characteristics of 21st K 12 (E): weight - 302 tons, barrel caliber - 211 mm, barrel length - 33.3 m, gun length - 41.4 m, maximum elevation angle - 50°, horizontal aiming angle - 360°, projectile weight - 107.5 kg, muzzle velocity - 1625 m/s, firing range - 115 km, rate of fire - 6 rounds per hour.

24-st Teododog Vgopo

The Teododog Vgapo gun was a 238 mm naval gun used in the First World War on ships of the M/sheÿÿasÿ class. The gun was mounted on two 4-axle platforms; for firing, high-explosive shells 1/4.1 weighing 151 kg were used, carrying an explosive charge weighing 16.8 kg. Before the war, six such guns were built and 5,723 shells were fired at them.

Characteristics of 24-st Teododog Vgapo: weight - 95 tons, B barrel - 238 mm, barrel length - 8.4 m, gun length - 20.7 m, maximum elevation angle - 45", horizontal aiming angle -

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360°, projectile weight - 150 kg, muzzle velocity - 675 m/s, firing range - 20.21 km, rate of fire - 15 shots per hour.

28th Koghe Vgopo

The 283 mm Kigtge Vgipo ("Short Bruno") gun was a 5K 1./40 naval gun. For firing, high-explosive shells 1 / 4.1 weighing 240 kt were used,

carrying an explosive charge weighing 20.4 kg. The gun rested on two 5-axle railway platforms. During the period from 1936 to 1938, 8 guns were built with 5230 rounds of ammunition for them. They were distributed among four batteries (690, 694, 695, 696), each of which had two guns. In March 1945, only four guns remained, of which two needed replacement BARRELs.

Characteristics of the 28-st Kshkhe Vgapo: weight - 129 tons, barrel caliber - 283 mm, barrel length - 11.2 m, gun length - 22.8 m, maximum elevation angle - 45 °, horizontal aiming angle - 360 °, projectile weight - 240 kg, muzzle velocity - 820 m/s, firing range - 29.5 km, rate of fire - 10 rounds per hour.

28th Capde Vgipo

Gapve Vgipo (“Long Bruno”) was a 5K 1/45 naval gun that fired 1/3.6 high-explosive shells weighing 302 kg, the weight of the explosive charge was 20.1 kg. This gun with an increased barrel length proved to be much better in operation than the Kshte Vgipo, the firing range increased to 36.1 km. Three guns of this model were built in 1937, ammunition was made for them In the amount of 1472 shells.

Characteristics of the 28-st Gapve Vgipo: weight - 123 tons, barrel caliber - 283 mm, barrel length - 12.74 m, gun length - 22.8 m, projectile weight - 302 kg, muzzle velocity - 865 m / s, firing range – 36.1 km.

28-st 5sÿmege Vgipo

Before the war, the Krupp firm manufactured two guns esN \ ege Vgapo ("Heavy Bruno"), firing shells weighing 118 kg. Both guns were still in service in March 1945; they were in service with the 689th railway battery. | Characteristics of the 28-st NI Vgipo: weight - 11871, barrel caliber - 283 mm, barrel length - 11.93 m, gun length - 22.8 m, maximum elevation angle - 45 °, horizontal

aiming angle - 360", projectile weight - 284 kg, muzzle velocity - 860 m/s, range - 37.8 km, rate of fire - 10 rounds per hour.

28th Metse Vgipo

From 1938 to 1940, the Krupp company developed the Metse Vgipo (“New Bruno”) gun of 280 mm caliber, in 1940-1942. three guns were built and put into service. The barrel had a length of 58 calibers, the total weight of the gun was 123 tons. The gun was located on two 6-axle platforms. Shooting was carried out with shells 28-st-Ot 39 weighing 255 kg, the weight of the explosive was 33.4 kg. The maximum firing range of 46.6 km was achieved, but this did not satisfy the customers, so the production of the gun was stopped. All three guns were still in service in March 1945.

Characteristics of the 28-st Metse Vgipo: weight - 150 tons, barrel caliber - 283 mm, barrel length - 16.4 m, gun length - 24.8 m, maximum elevation angle - 50°, horizontal angle

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aiming - 1°, projectile weight - 255 kg, muzzle velocity - 955 m/s, range - 46.6 km, rate of fire - 20 rounds per hour.

28-st K5 (E) |

In 1934-1935. A cannon was developed under the designation 28-st K5 (E), which was put into service in 1940. Shooting was carried out with shells 28-st-St 35, which, weighing 255 kg, carried 29.3 kg of explosive. The barrel of the gun was made in four versions, differing in threading; a new boring of the barrel was carried out after 240-550 shots. The gun was mounted on two 6-axle railway platforms.

A total of 25 K5 (E) guns were built at a cost of 1.25 million Reichsmarks each, they were known in the troops under the names 5eÿÿapke Vepa (“Thin Bertha”) or Georo1d. The battery, consisting of one or two K5 (E) guns, was transported to a new position by two separate trains.

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In the fall of 1943, the 697th and 713th batteries with Leopolds took part in the shelling of Leningrad. Since the end of 1943, due to the increased activity of Soviet aviation and the increased destruction of the German railway network, it was proposed to transport the K5 as field guns, disassembling them first into sections (barrel, carriage, platforms). Each section was to be transported by two tractors, in this case the tractors were to be carried out on the basis of the Tiger P tank. However, this plan was never implemented until the end of the war.

During January-February 1944, the K5 (E) gun bombarded the beaches of Anzio, causing significant losses in equipment and manpower to the landing allies. The Allies tried for a long time to destroy this cannon, which they called the Ap710 Apshe or Ap2io Expez$, but to no avail. The fact is that in case of danger, the cannon retreated to a shelter equipped in a railway tunnel laid through a mountain range. During the retreat, the Germans blew it up, because the railway tracks along which it was supposed to carry out the withdrawal were destroyed by the advancing allied forces.

To increase the maximum firing range, a new type of projectile VOG 43311 was developed in Peenemünde. The projectile equipped with a rocket engine weighed 248 kg, the engine turned on 19 seconds after the shot, pushing the projectile further into the stratosphere, the result of this was a range of 86.5 km . Although this was a definite success, the presence of a rocket engine reduced the weight of the explosive in the projectile to 14 kg. Peenemünde also tested a new winged projectile weighing 120 kg and designed to be fired from a 310 mm cannon. The initial velocity of such a projectile was 1524 m/s, which made it possible to achieve a firing range of 155–160 km.

In March 1945, five K5 (E) guns of 283 mm caliber remained in service, for which there were no more ammunition, as well as two guns bored out to a caliber of 310 mm, for which only 25 shells remained. Another three guns were under repair, although there were just one stem.

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Characteristics of 28-st K5 (E): weight - 218 tons, barrel caliber - 283 mm, barrel length - 21.54 m, gun length - 31.1 m, maximum elevation angle - 50°, horizontal aiming angle - 1 '', projectile weight - 255 kg, muzzle velocity - 1120 m/s, range - 59 km, rate of fire - 15 rounds per hour.

38-st eu thead

Before the war, the Z1ez ed gun was built, which was a 5K S/34 naval gun of 380 mm caliber, which was used on ships of the Vistagsk class. Shooting was carried out with projectiles

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Siereiea-Stapage 1/4.5 weighing 495 kg, carrying 48 kg of explosive. A more powerful projectile, Sprepermana 1./4.6, was also used, weighing 800 kg and carrying 69 kg of explosive. Initially, it was planned to order seven guns of this type, but due to their high cost (about 5 million Reichsmarks per gun), they limited themselves to purchasing only three guns. At the end of the war, one gun with 8 shells was in service, and another one was under repair.

Characteristics of the 38-st Ze unit: weight - 294 tons, barrel caliber - 380 mm, barrel length - 19.63 m, gun length - 24 m, projectile weight - 495 kg, muzzle velocity - 1050 m / s, range - distance - 55 km.

80st Soga

The largest cannon in World War II was the 80 cm Dora. Back in 1935, on the instructions of the High Command of the Army (OKN), tests were carried out in order to determine which calibers of artillery would be effective against the fortifications of the Maginot Line. The Krupp firm developed designs for 70 cm, 80 cm and 100 cm caliber guns. When Hitler visited the firm in 1936 and got acquainted with the projects presented to him, he demanded the speedy creation of a super-heavy gun. After that, the specification for the gun was issued with the following characteristics: maximum range 35–45 km, elevation angle 65°, penetration capacity - 1 m of steel armor, 7 m of concrete and 30 m of hard

earth. In 1937, the Ministry of Armaments issued an order to Krupp for three 80 cm guns. The development of the gun was led by E. Müller.

However, the cannon was not completed by the originally planned date (spring 1940), so the invasion of France went without it. The gun was completed only a year later, its tests were carried out at the range in Hillersleben from September 10 to October 6, 1941. In November, the gun was installed on a railway platform and transported to the range in Rügenwald, where from November 25 to tests. In total, 8 test shots were fired with shells weighing 7100 kg at a distance of up to 37,210 m.

In January 1942, the 672nd heavy (railroad) artillery battery was formed, which included a single 80-cm gun, the battery was commanded by Colonel R. Bohm. It must be said that the cannon was called “Dora” in the troops, but on June 22, 1942, by order of Hitler, the gun was named Zezuegeg Sisÿau (“Heavy Gustav”), after the name of the head of the developer G. Krupp.

The 672nd battery included a headquarters, a fire control platoon, a reconnaissance platoon, an observation platoon with infrared equipment, battery crews for gun lifting, maintenance and movement, the personnel numbered 500 people. The battery was attached to construction teams, an anti-aircraft battalion, a team of 20 engineers from Krupp, a smokescreen unit, two Romanian guard companies, a military police unit, a squad of patrols with guard dogs and an aviation group from the Luftwaffe, which included spotter helicopter and cover fighters. Directly during firing, the cannon was served by 350 people, in total there were approximately 3870 people.

The 672nd battery was transported to the Sevastopol region in April 1942. To ensure the possibility of transporting the gun by rail, it was dismantled into its main parts, which were transported on special platforms. Transportation of the cannon required 5 trains with a total length of 1653 m. The Dora's combat position had a barbed wire fence, guards and a camouflage system to hide this huge weapon from enemy observers and protect it from air attacks and shelling from warships.

In a combat position, the gun was mounted on eight 5-axle bogies moving along two parallel railway tracks. Horizontal aiming of the gun was carried out

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due to the fact that the tracks on the firing position were made in the form of curves of a certain radius. The gun with horizontal guidance was moved by two diesel locomotives with a capacity of 1000 liters each. With. The fire was carried out only strictly parallel to the track, since in the event of a deviation from the axis of the track, the gun would inevitably turn over during firing. The vertical aiming of the gun was carried out with the help of an electro-hydraulic drive.

Two types of shells were used for the Dora: concrete-piercing shells for heavy fortifications and high-explosive shells for general bombardment. The concrete-piercing projectile weighed 7.0 m and had a length of 6.79 m; the high-explosive projectile weighed 4.8 and had a length of 8.26 m. One shot took from 19 to 45 minutes, the barrel had a resource of 100 shots. The firing range was from 28 to 47 km.

On June 5, 1942, the first shot from a cannon was fired at Sevastopol. Another 47 shots were fired before June 17, when the ammunition ran out. Of these 48 shells fired, only 10 hit the target with a deviation of up to 60 m. The largest deviation of one of the shells was approximately 740 m. After the capture of Sevastopol, the Germans fired 5 more shots, and then the gun was dismantled.

There were plans to use this gun in Leningrad in September 1942, but due to the fact that the Soviet troops continually tried to break the blockade ring, the gun was sent to Rügenwalde for repairs. There, a new barrel was installed for her and in March 1943 they tested it, firing 4 shots. Two of these shots were observed by Hitler on 19 March. He was impressed by what he saw, especially by the fact that one of the shells flew 47 km away.

The second gun "Dora" was almost finished, but the gun team for it was never formed. In April 1945, both guns were blown up by the Germans during the retreat, they were discovered by the Allies in Saxony and Bavaria.

At the end of the war, Hitler issued an order to finish the third gun. Its caliber was 52 cm with a barrel length of 48 m, the gun was going to be called Gapreg Siÿÿau (“Long Gustav”). It was assumed that Gapweg Siz{ay would shoot

rockets, the same shells were planned for the Dora. They were developed in Peenemünde, the firing range was 100 km. A similar projectile carried 25-30 kg of explosive, but Hitler demanded a more powerful projectile. Therefore, studies were carried out to create a rocķet weighing 10,000 kg, which could carry up to a range of 160 km. 1200 kg of explosive and at the same time

Characteristics of the 80-horn: weight - 1350 tons, barrel caliber - 800 mm, barrel length - 32.48 m, gun length - 43 m, maximum elevation angle - 53°, horizontal firing angle - 0°, projectile weight - 7.1 t (concrete-piercing) and 4.8 t (high-explosive), initial speed - 720 m / s (concrete-piercing) and 820 m / s (high-explosive), firing range - 37.8 km (concrete-piercing) and 47 km (high-explosive), rate of fire - 3 rounds per hour.

21. EXPERIMENTAL GUNS

Nosegoskrotre

In 1942, the development of a project for an ultra-long-range gun of an unusual design under the designation Noshingiskritre (HOP high-pressure pump) was started at the German company Eizepügerkön Kosshe in Wetzlar;), Reb rez GlezsVep (“Hard-working Lizhen”), V-3 and Ettdeg (“Friend”). The concept used in the development of the weapon was to disperse the projectile along the long barrel of the cannon in a series of successive explosions.

In May 1943, Hitler instructed to speed up work in this direction, since he saw in this gun a fairly cheap means for shelling London. Soon the firm Kosÿ-ÿpe issued

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a task to the RUM firm to build a model of a 20 mm cannon, which was shown to Hitler in September 1943, making a great impression on him. Taking into account that work on the A4 ballistic missile was suspended due to the massive bombing by the Allied aviation of Peenemünde, Hitler ordered the construction of 50 NOR guns at once, without waiting for the completion of the testing of the prototype. At the same time, it was ordered to start building two combat positions for guns on the northern coast of France in the Calais region.

Each position was supposed to be equipped with concrete underground bunkers up to 100 m deep, in which 25 guns were to be mounted. The positions were to be served by a special unit, in which

there were 1100 people. The barrel of a 150 mm caliber gun consisted of 32 intermediate links and had a total length of 124 m; it was installed on an inclined concrete foundation. Each intermediate link 3.48 m long had chambers on both sides for additional charges of gunpowder, the chambers were located at an angle of 90° to the axis of the barrel. The initial weight of the gun was 62 tons, but as a result of finishing work, it later increased to 76 tons.

For this nushka, Kossipg designed high-explosive projectiles 3.165 m long and weighing 140 kg, the projectile carried 25 kg of explosive. When fired, it was supposed to undermine 4.5 kg of the main expelling charge, after the projectile passed the first intermediate link, both side additional charges weighing 4.7 kg should have exploded, further accelerating the projectile. This process must be repeated over and over as the next links are passed. In this way, they hoped to achieve an initial projectile velocity of 1500 m / s, which resulted in an estimated range of 160 km. | E

After successful testing of a model gun with a short barrel at the artillery range in Hillersleben on January 18, 1944, tests of a prototype gun with a normal length barrel began. From 21 to 25 March, the Nossagiskritre gun was demonstrated to the armaments administration commission. The tests gave the following results: the initial velocity of the projectile was 1100 m/s, the firing range was 50 km. In the final report of the commission, it was stated: “After the elimination of some shortcomings, the tool is suitable for use. The projectiles are completely unusable due to their instability.” It turned out that during the development of the shell, its model was not even tested in a wind tunnel for stability, although the production of shells had already begun in September 1943, and by the end of March 1944 it was planned to deliver 25,000 shells. On April 6, Speer informed Hitler about the problem with shells, he ordered instead of the 50 planned guns to finish only 3 guns, and to urgently develop shells of a new design for them. After that, at the end of May, tests of projectiles developed by various companies began. In the meantime, the Reich Science Committee sent a letter to Bormann and Hitler's secretary explaining the reasons for not

good luck in the development of RRR and proposed new options for the design of the gun, including options for arranging additional charging chambers at an angle of 45° to the axis of the barrel.

By the beginning of September 1944, a decision was made to develop a version of the gun under the designation GVK 15258. Its barrel consisted of the barrel of a 150 mm EN18 howitzer and twelve intermediate links of the same caliber with two explosive chambers on the sides of each. The total length of the barrel was 50.01 m, the weight of the gun was 28 tons. 4481 weighing 97 kg. The expelling charge contained 5 kg of the main charge and 24 additional charges, totaling 72.8 kg. At an initial speed of 935 m/s, it was expected to achieve a maximum range of 49.3 km.

The new weapon was being prepared for testing as part of the offensive in the Ardennes. In mid-December, an artillery team Mogkottapdo 4eg Agepe-Ar!.705 was prepared, consisting of 30 people, which was attached to an auxiliary unit of 38 people. A position was set up southeast of Trier, where it was planned to install four GVK 15258 guns.

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Each gun was mounted at an angle of 34 ° on a concrete foundation more than half a meter thick. The barrel was attached to the foundation using a load-bearing structure made of wood and steel, the weight of this structure was 21.5 tons. December 28, 1944; the first battery (1.Vayegie 4er Ap. ABE.705) was put on alert. Out of a total of 365 shells made for the cannons, 44 shells were delivered to the battery on December 29. At 22.16 on December 30, the first shot was fired at Luxembourg. The initial velocity of the projectile was 884 m/s, and the firing range was 42.5 km. Before New Year's Eve, another 27 shots were fired.

The second gun opened fire on January 3, 1945. After firing from two guns, by January 5, only 16 shells remained from the prepared ammunition load. Then, on January 10, another 60 shells were delivered, which was enough for three days of firing. Subsequently, the activity of the battery was determined by the amount of ammunition brought in, but by February 22, the shelling had ceased, and a total of 157 shots had been fired. Due to the lack of ammunition, guns No. Zi No. 4 did not enter the battle at all. The effect of the shelling was minimal, it corresponded to

Measured by the effect of shelling with howitzers of the same caliber, the dispersion during firing was up to 5 km. It was supposed to use guns against Antwerp, but for this it was necessary to increase the total weight of the expelling charge to 120 kg, which increased the firing range to 65 km. However, the end of the war interrupted all work on fine-tuning E. VK 15258 and on the main version of Nosdagiskritre. At the end of the war, the Americans captured one gun and took it to the United States.

Characteristics of Nossagiskrshtre: caliber - 150 mm, length - up to 140 m, projectile weight - 140 kg, estimated range - 165 km.

5ÿÿÿ capope

Speer's ministry had a research institution based near Lofer, Austria, in which Dr. Richard Wallauschek attempted to use sound as a weapon. His last and best project, called the SchaPkapope (Sonic Cannon), was a system of a 3.2 m diameter parabolic reflector, a small diameter counter reflector, and a combustion chamber that passed through the top of the counter reflector. Inside the chamber, there were two coaxial nozzles; methane was supplied through the outer nozzle, and oxygen was supplied through the central nozzle. The sound waves formed during the combustion of the gas mixture were collected by the main reflector and reflected in the required direction.

According to calculated estimates, the maximum sound intensity of the gun should have had an opening angle of 65°, and at a distance of 60 m along. its axis, the sound pressure could reach 1000 microbars. It was assumed that the impact of such pressure on a person with a certain frequency for 30-40 seconds could lead to irreversible changes in his body, up to death. At large distances, perhaps up to 300 m, the sound effect was not lethal, but when exposed to a person for a long period of time, it was able to cripple him. At the same time, vision was damaged, and a person subjected to sound exposure perceived point sources of light in the form of luminous lines. However, there is no information about the use of a sonic gun.

Shoya\utyeNapope a

The Austrian scientist Dr. Zippermeyer, who also worked in Lofer, was engaged in research in the field of creating miniature tornado-type vortices in the air, which were supposed to have a catastrophic effect on flying aircraft. The first attempts to create an anti-aircraft gun ÿ lyuÿÿÿÿÿkapope (“Air whirlwind gun”), which worked on compressed air, did not lead to success.

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Then Zippermeyer suggested creating vortices in a new way. The essence of this method was as follows. The projectile was filled with finely dispersed coal powder, inside of which there was a small charge of coarsely dispersed powder. After the initiation of the explosion, a cloud was formed from a mixture of coal dust and gunpowder, moving forward with rotation around its axis and resembling a small tornado. The burning gunpowder acted on the coal dust in the air as an igniter, resulting in a volumetric explosion of a vortex cloud.

Of course, to create the tornado effect, it was necessary to provide a certain combination of projectile flight speed (several hundred meters per second), projectile rotation speed around its axis, initiating charge explosion force and its burning time. Zippermeyer used a large caliber mortar for his experiments. On the further development of this work

nothing is known.

Mÿpakapope

One of the firms in Stuttgart was working at the end of the war on the creation of an anti-aircraft gun called Mipakapope ("Wind Cannon"). The idea: was that the cannon was supposed to shoot pulsed jets of gas formed during the explosion of an oxygen-hydrogen mixture. It was assumed that a pulsed jet hitting a flying enemy aircraft would have a destabilizing effect on it (for example, turn it over), after which the aircraft should lose control and crash.

The made model of the gun was tested at the training ground in Hillersleben. According to some reports, from a cannon on

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at a distance of 200 m it was possible to damage boards 25 mm thick. At the end of the war, this gun model was captured by the Americans and taken to the USA.

Zoppepkapope

At the end of the war, the Germans created the Soppepkapope ("Solar Cannon") cannon, based on the use of Archimedes' mirror. The gun was a large-diameter mirror mounted on a frame. It was assumed that in clear weather the mirror would be able to concentrate the energy of solar radiation on a flying enemy aircraft, which would damage it. A prototype of this weapon fell into the hands of the Americans. Nothing is known about the further fate of this weapon.

Herknokapope

At the instrument-making firm Szesvay of Segagefai in Klais, which belonged to the arms department, a type of weapon was developed in which the projectile was accelerated by an electromagnetic field. The development of the cannon under the designation Eje gokapope (“Electric gun”) was based on the results obtained by the French during the First World War.

The barrel of the gun was a linear motor consisting of a set of electromagnets following one after another. When fired, the projectile was accelerated by the electromagnetic field of each subsequent link. In October 1944, during tests, the initial projectile velocity of 960 m/s was reached at a current strength of 21,000 A.

The development of the 40-mm anti-aircraft gun 4-st-Nak was planned, the shells for which were developed in Peenemünde. They hoped, with a sufficiently long gun barrel, to achieve an initial projectile velocity of 2500 m / s. Calculations showed that for the operation of an anti-aircraft battery of such guns, a whole power plant is needed, generating a current of 1.5

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million amperes and a voltage of 1300 volts. Until the end of the war, only three prototypes of a gun with a barrel length of 2 m were built.

22. SPECIAL ARMS Shooting pens and pencils

With the advent of automatic (self-writing) fountain pens and collet pencils, the idea arose to create on their basis a disguised small-caliber weapon that could be adopted by special services.

In 1933, the German company Waffen-Glaser developed a shooting device called 5TOR in the form of a collet pencil, it could fire small-caliber combat cartridges, small shot, "gas" or noise cartridges. |

During the Second World War, by order of the British Special Operations Directorate, the production of shooting fountain pens was carried out in a special laboratory in Welwyn (a suburb of London). There, in particular, the product "Enpen" MK I was developed, which was an ordinary fountain pen with a clip-on cap. The smooth barrel of a fountain pen was equipped with one cartridge. Before firing from the Enpen, it was necessary to remove the safety pin, then pull the clip of the fountain pen back, and the shot took place.

Similar weapons were being developed by the US Office of Strategic Services (OSS) Research and Development. In 1942, the OSS issued an order to develop weapons for agents operating in enemy territory and in need of various models of small-sized, covertly carried, covertly operating or covertly mounted weapons. On the basis of Enpen, the Americans developed a sob

The original model called the "Scorpion", soon renamed the "Stinger", This one-time device had a smooth barrel, a simple percussion mechanism, a stamped wire-pull clip trigger. To prepare for the shot, the clip was lifted and moved back; to carry out the shot, it remained to press the lever again against the cap of the handle. In just one year, several American firms produced about 40,000 Stinger pens at a price of 40 cents apiece. They were supplied in large quantities to the Resistance fighters in Europe and to the partisans in Southeast Asia.

A more complex design was a pencil-pistol designed for the OSS for a 6.35 mm Browning pistol cartridge. Not only did it look like a collet pencil, but it could even write. The barrel was mounted at the top of the pencil, the striker was cocked by the protruding button.

Shooting fountain pens were developed in Germany during the war. One of them was supposed to be used during the planned assassination attempt on I.V. Stalin. W. Schellenberg told about this in his memoirs, describing the meeting with Ribbentrop, which took place in the middle of 1944: “However, before I had time to open my mouth, Ribbentrop said that he had thought through the practical implementation of the plan to the smallest detail. Of course, he said, one should expect the Soviet guards to be extremely vigilant, so it was unlikely that a hand grenade or a pistol could be brought into the meeting room. But he knows that our technical department has developed a model of a fountain pen, in the body of which a revolving barrel is mounted. A standard caliber bullet fired from this "handle" at a distance of six to eight meters hits the target exactly. Since such a pen is unlikely to arouse the suspicions of the guards, this plan, Ribbentrop believed, can be successfully carried out, so long as the hand does not tremble.

Shooting cigarettes, cigars and pipes

During the war years, the Val-Woodbine shooting cigarette and the Val-Charut cigar were in the arsenals of British and American intelligence agencies. For better camouflage, the trunk was even covered with a layer of burnt tobacco. They shot from them practically

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practically point-blank, holding in the hand at a distance from the body, since the recoil when fired knocked the weapon out of the fingers.

Pistols in the form of a smoking pipe had more acceptable characteristics. Such shooting pipes were made in the laboratory in Welvin, they could even be stuffed with tobacco. A trigger mechanism was placed in the tube, and a steel barrel loaded with a 5.6 mm cartridge was screwed into it. A bone mouthpiece, attached to the tube with a bayonet connection, covered the barrel and was quickly removed before firing. The drummer was cocked by a button that slid in the L-shaped groove of the tube, to fire it it was necessary to push it out of the groove with a finger, after which the helical coil spring sent the drummer forward, and he broke the cartridge primer.

Shooting buckles

In 1934, the German Goldberg developed a 12-shot revolver-buckle, in the disc drum of which 5.6-mm cartridges were inserted. Due to the lack of a barrel, the buckle had to be fired point-blank. A trigger mechanism with a cocking lever and a trigger lever was mounted in the buckle body. Turning towards the enemy, the owner could shoot by pressing the knurled head of the KOV lever in the upper corner of the buckle.

In 1943, L. Marcus developed a buckle for SS officers, in which two short loaded barrels and a firing mechanism with two release keys were installed. The production of double-shot buckles was organized at the Assmann brothers' bicycle factory in Leibnitz.

Clothing shooting devices

In 1929, the American 3. Yuhash developed a single-shot pistol, mounted on the forearm and hidden by the sleeve of a jacket or coat. The barrel was loaded with one 7.62-mm cartridge and screwed into the receiver, in which the percussion mechanism was mounted. The drummer was cocked with the second hand for a kind of trigger protruding behind the box, and the descent from

united with a thread with a ring on the finger. For a shot, it was necessary to direct the hand to the object of attack and throw up the palm, thereby pulling the thread, which pressed the trigger.

A device patented by the American F.F. Leininger in December 1941 included a disk-shaped magazine with circular chambers and a battery-powered electric firing device with a push-button switch. All this was fastened with straps through a shock-absorbing pad on the leg in the knee area. By pressing the switch, for example, by crossing his legs, the owner of the device could fire several shots without using his hands.

Similar devices were developed by the Germans. One of them, called Rapgetkpaske ("snapping armor"), was developed for Operation Zeppelin. The purpose of the operation "Zeppelin" was to organize an assassination attempt on the head of the Soviet state I.V. Stalin. O. Kraus was appointed head of the special reconnaissance and sabotage team "Zeppelin", the headquarters of the team was located in Pskov. The Soviet prisoner of war Pyotr Shilo (aka Tavrin, aka Politov), who was personally instructed by General Vlasov and O. Skorzeny, was selected for the role of the main executor of the operation. To carry out the act of sabotage, Shilo was supplied with a set of special weapons, among which was, in particular, the Panzerknake mini grenade launcher. The “Panzerknake”, which was a launch tube, was attached to the arm and hidden under the sleeve of outer clothing, fired miniature armor-piercing incendiary projectiles of 30 mm caliber, capable of penetrating armor 45 mm thick. The start was made with an electric fuse - the battery was placed on the belt, and the start button was on the other hand, the wires were passed under the clothes.

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At 02:00 am on September 5, 1944, a specially prepared Ag 232V-0 aircraft flying towards Moscow was spotted by air defense systems of the Moscow region in the Kubinka region. The plane, having come under fire from anti-aircraft guns and received damage, went back and made an emergency landing near the village of Yakovlevo, Smolensk region. The crew of the aircraft unloaded a motorcycle with a sidecar and sent Shilo and his partner, who took weapons with them, 428,000 rubles, a large

the number of forms of documents and seals in the direction of Moscow to complete the task. After that, leaving the badly damaged car, the crew left in two groups by scaffolding towards the front. At six in the morning, Shilo and his partner were detained by the NKVD in the village of Karmanovo, Smolensk Region.

ÿbegspog

In May 1942, the American company Hyde Lamp Division (Indiana), which was a division of General Motors Corporation, received an order to manufacture a batch of single-shot 11.43-mm pistols in the amount of 1 million pieces. The pistol, which received the code designation EP-45 (NMage Rgodesyug - “flash lamp”), was intended for partisans in Europe, Southeast Asia and the Pacific Islands, later it was given the name GLbegayug (“Liberator”). "Liberator" consisted of a barrel, bolt, handle, trigger mechanism and trigger guard. Ten spare cartridges could be placed in the lower cavity of the handle - eight were placed in front in two rows and two more vertically behind. For the production of the pistol, the cheapest materials were used, the finish was virtually absent.

The aiming range was formally about 23 m, but in reality it was much less, because a smooth barrel with large tolerances for the dimensions of the chamber and channel allowed effective shooting almost at close range. There were no stamps on the pistol, it was packed in a cardboard box along with 10 cartridges, a wooden extractor rod for extracting the cartridge case and a comic book instruction. The cost of one packaged pistol kit was only 2.1 dollars. To drop the Liberators, the partisans used a container that contained 20 boxes and weighed 22.7 kg. The simple and unpretentious metal construction of the container allowed both parachute drop from an aircraft and non-parachute drop from a strafing flight.

The Liberator was developed in several modifications, among which was a version chambered for the 9 mm Parabellum cartridge, more common in Europe, a two-shot version, and a version with a silencer. The two-shot version included a movable block of chambers - behind the barrel

a bar with two chambers for cartridges was placed horizontally. After firing from the left chamber, the shooter cocked the striker again, moved the bar to the left, and fired the next shot. However, this option did not go into mass production. The option with a silencer lost the main advantages of a pistol - portability and cheapness, so this option did not work either.
beyond the experienced.

Characteristics of the "Liberator": caliber - 11.43 mm, weight without cartridges - 445 g, total length - 141 mm, barrel length - 102 mm, muzzle velocity - 250 m / s, effective range - 23 m.

Catherine

Based on the signal pistol Geÿ.R. In 1942, the Germans developed a 26-mm combat pistol Katrÿrÿÿÿoÿe 7, (KtrR.2). The KmR.Y, unlike the smoothbore Hep.R, had five rifling in the bore (7, meaning 206 - rifling), as a result of which the accuracy, efficiency and firing range were significantly improved. The Kampfpistole fired a $rgeperagope-4 grenade,

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designed to deal with the manpower of the enemy. The effective firing range reached 200 m, the radius of destruction by fragments was 20 m.

Soon, the set of ammunition used in the combat pistol 2. was expanded by adopting a new 61-mm anti-tank cumulative grenade 42 ÿÿ (ÿÿngeg igÿkoreger or Geÿÿÿÿÿÿÿÿÿÿ 42 ÿÿ). According to Soviet data, the grenade penetrated 50 mm armor at a distance of up to 75 m, which allowed trained German grenade launchers to fight Soviet T-34 tanks at close range. Due to the high power of the grenade, it was necessary to shoot from a pistol only with a shoulder rest attached to it and a folding sight. The total number of Ktr.2 pistols produced by the firms Sai Managher and EKMA amounted to 25,000 pieces.

Possibilities of signal pistol ÿÿÿ.ÿ. were expanded - it began to be equipped with an insert rifled barrel - liner EnsiesKiass, which made it possible to fire both grenades with ready-made rifling Zrgeprragope-2 and 42 GR, and (with the liner removed) fragmentation grenades 358 EP, as well as

12 M.E, Kozyrev, V.M. Kozyrev 353

signal and lighting cartridges. The new weapon was named the 5ishtrazoye assault pistol. For greater stability during firing and increasing the accuracy of the battle, a folding shoulder rest was attached to its handle, as in signal and combat pistols 2, and a nozzle with a sight was put on the barrel. In 1943-1945. The German arms industry has produced more than 400,000 pieces of liners for converting flare pistols into assault ones.

Although the new weapon showed some achievements in terms of design, it had a relatively small effect on the increase in the firepower of the German infantry. Therefore, at the end of the war, the samples of combat and assault pistols remaining in the front-line units were transferred by the Wehrmacht command to arm the Volkssturm battalions that were being formed. |

Characteristics of KtrR.2: caliber - 23 mm, weight without cartridges - 1.4 kg, total length - 254 mm, barrel length - 98 mm, muzzle velocity - 991 m/s, armor penetration at a distance of 100'm -. 50 mm, effective range - .200 m.

Characteristics. 81R: caliber - 26/23 mm, weight without cartridges - 2.5 kg, overall length - 305/584 mm, barrel length - 1,55 mm, armor penetration at a distance of 100 m - 50 mm, effective range - 200 m .E x

Hiding devices _

At the end of the war, the Germans had devices that made it possible to fire from small arms, hiding behind a blank wall. The first samples of such devices appeared in 1943 after gaining experience in street fighting. They were used on carbines 98K, self-loading rifles ÿ 41 (ÿ), assault rifles 510 44, etc.

The device consisted of three main parts: the stock, body and periscope. A wooden butt of a conventional rifle type was attached to the lower part of the body of the device. A trigger hook was mounted on the butt, which, using a trigger lever and a metal chain, was connected to the trigger mechanism of a rifle fixed in the upper part of the fixture body. At

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aiming was carried out through a cylindrical periscope with mirror prisms, which was attached to the rear wall of the device body.

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At different times, various samples of these devices were produced, differing mainly in the quality of the manufacture of the periscope and other minor changes. The weight of the device without a rifle was 5.6 kg. Thus, the total weight of the device with the 98K carbine installed reached 9.5 kg, and with the S 41 (XM) self-loading rifle, about 10.4 kg. Length - 480 mm (taking into account the length of the weapon, the total length was about 1.5 m), height - 290 mm, width - 130 mm. Due to the strong shift of the center of gravity forward, fire is used. fixtures could only be driven from the stop.

Later, a device appeared, which was a small barrel nozzle with a bend at an angle of 32 °. The nozzle was put on the muzzle of a 516 44 rifle. The nozzle was equipped with a front sight and a special periscope sight. The sight provided a fairly high accuracy of firing: a series of single shots fell into a circle with a diameter of 35 cm at a distance of 100 m. 10,000 copies. There were nozzle options with barrel curvature of 45°, 60° and 90°. The main non-original devices were low survivability - nozzles withstood about 250 shots (survivability decreased in proportion to the increase in the angle of curvature of the barrel).

these

23. INDIVIDUAL ARMOR PROTECTION

The question of developing individual armor protection in the conditions of the use of firearms arose sharply at the end of the 19th century. The steel helmet was the first to take root in the troops, but the development of other wearable means of protecting a fighter has gone a difficult way. The first work in this area was initiated by the Anglo-Boer and Russo-Japanese wars (respectively, 1899-1902 and 1904-1905). The First World War gave rise to a lot of inventions and samples of personal armor. At the same time, the main types of protective equipment were determined: shells; devices attached to small arms; portable shields; shelters rolled on wheels across the battlefield; all possible combinations of them.

Armored shields

Since 1886, in the Russian army, light steel shields designed by Colonel Fischer and Danish Captain Holstein began to be used to protect against bullets. The use of shields did not start by chance. At that time, they still didn't really know how a bullet would affect the body of a fighter, hitting the chest armor with force. A wearable shield, located at some distance from the body, well cushioned the blow.

During the Russo-Japanese War, during the siege of Port Arthur, the Japanese attacked Russian positions, hiding behind 20-kilogram English-made shields a meter long and half a meter wide.

During the First World War, the French made extensive use of the Degri steel shield, and the Russian army had several different systems, including a rifle shell developed in 1915 by specialists from the Sormovo plant. A number of similar means were also used in limited quantities: the technical committee of the State Higher Technical School, Lieutenant Gelgar, General Svidzinsky, external shields and spade shields of Dr. Kochkin and Yesaul Bobrovsky, several options for wheeled shields.

On the eve of the Great Patriotic War, a portable shooting shield was created, which entered service with the Red Army. It was a double-pitched steel sheet with flaring along the edges and inside, there was a loophole on the right. An internal shelf for rifle clips was provided. In the initial period of the war, these shields were used in special units.

The infantry units used the CH-42 universal bib 2 mm thick and weighing 3.5 kg. In 1942, an armored shield measuring 560 x 450 mm, made of 4 mm steel sheet, was tested.

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Usually it was worn on belts behind the back, and in a combat situation the shooter put it in front of him and inserted a rifle into the provided slot. Observers and snipers used the so-called "soldier's armor" - a 5-mm steel sheet measuring 700 x 1000 mm and weighing 20-25 kg with edges turned inward and a hole for a rifle.

The Germans had shields with a loophole of a similar type, which were mass-produced and proved to be the best; Japanese soldiers were also supplied with similar devices.

In the United States in 1939, a rifle armor shield was developed in the form of an oval cone of impressive size. Along its edge, there was also a magazine for cartridges in the form of a closed flexible tape, which moved one step during the next shot. In 1940, a folding device appeared in the form of a package of armor plates, hinged and mounted in the butt of a rifle. When folded, they were placed in a special niche, and in battle they were removed from it with one movement and unfolded like a fan, covering the lino and the head of the shooter. Small holes were provided for aiming and observing the terrain. In 1942

a “universal combine for an infantryman” was proposed, that is, a shovel that at once served as scissors for cutting barbed wire and a shield with a loophole for weapons.

In Germany, mobile armored devices were also developed that provided individual protection for the fighter from all sides. Such devices included Eaÿparcheg and Kiveirapheg. |

Raphepajene (“Mobile Armor”), also called Raphepajene (“Armored Carriage”) designed by Schumann, was a small cylindrical tower mounted on a four-wheeled chassis and capable of moving along narrow-gauge rails. This armored tower, designed for one person, was armed with a 50 mm cannon. This device was used in the conduct of positional battles. At a specially prepared position, a rail track was laid out, along which the Farpanzer moved either with the help of a winch or with the help of horse traction. The cap of the tower, close to a hemisphere, could rotate around the vertical axis by 360 °.

Kivge-rapkheg was intended for observation and artillery adjustment. It was a central cylindrical compartment, on the sides of which there are two disk-wheels, which served as a mover. Behind is a small tail roller. In front, at the level of the observer's eyes, there was a viewing slit. The device was equipped with a two-stroke motorcycle engine, the armor thickness is 5 mm. It was captured by the Soviet troops at the end of the war and is now on display at the Museum of Armored Vehicles in Kubinka.

armored clothing

During the First World War, special metal plates, the so-called armor breastplates, began to be used as personal protective equipment, but the weight of the armor turned out to be so large that it was almost impossible to move around in it. Before the Second World War and during it, the Red Army used protective equipment in the form of cuirasses in the manner of the Middle Ages.

outer armor (CH-1938, -1939, -1940, -1942, PZ-ZIF-20 it. 2; while the thickness of such armor reached 5 mm. Armored clothing of a more or less modern look (i.e., not all-metal) for the first time The United States Army Air Forces appeared, where the crews of the B-29 strategic bombers began to receive protective body armor.The thickness of such body armor was about 5-7 cm, they were intended to protect people not only from fragments of anti-aircraft shells, but also from

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machine-gun bullets of enemy fighters. The vests were made of many layers of stitched nylon dense fabric with metal inserts.

24. JAPANESE LIVING MINES

During the Pacific War, the Allied forces always outnumbered the Japanese by a ratio of 2:1, and sometimes 3:1. However, in preparation for the landing on the islands of Japan, it turned out that the Japanese had an advantage in the balance of power. So, for example, in front of 14 American divisions that landed on the island of Kyushu, there were 14 Japanese divisions, 7 separate mixed brigades, 3 tank brigades and thousands of specially trained marines, i.e. the ratio of forces was 3:2 in favor of the Japanese. These Japanese troops were well-equipped, armed and had a well-established communication system along the entire coast of Kyushu. They were familiar with the terrain, had stockpiles of weapons and ammunition, and an efficient ammunition transport and replenishment system, almost

, invisible from the air. Many of these troops were the elite of the Japanese army, and they had a fanatical fighting spirit that led them to believe that they must defeat the American invaders who came to desecrate their homeland.

To protect the coastline of their islands, the Japanese command planned to use a defense system consisting of a mined strip of coastal waters, three lines of suicide swimmers and suicide divers with mines, and another line of mines installed directly on the coast along its entire length. The suicide divers, called "fukuryu" ("underwater grotto dragons"), were armed with a variety of impact-fuzed mines, each of which was capable of sinking a landing craft

with a capacity of up to 950 tons. Fukuryu, which numbered in the thousands, could remain under water for hours, hiding in ships flooded off the coast. The equipment of underwater suicide bombers included a special suit, fins, a closed-cycle breathing apparatus with two compressed oxygen cylinders. The mines were attached to the end of a long bamboo pole, with the help of which a suicide bomber hiding at the bottom hit the bottom of a landing craft floating above him with a mine.

The task of the suicide swimmers was to deliver a mine tied to the end of the pole to the enemy ship, but so that the heavy ammunition did not sink and did not pull the swimmer to the bottom, a pork bladder inflated with air was tied to the mine. The following tactic was used: a swimmer swam up to the ship and ripped open a pork bladder with a knife. The severity of the mine pulled him down, he dived under the ship and hit the fuse on the bottom of the ship. On January 8, 1945, the American gunboat CI (0)-404 was damaged by suicide swimmers near the Palaus. On February 10, 1945, Japanese suicide swimmers attacked the hydrographic vessel AC 5-2 in Palaus harbor.

In addition to suicide divers and suicide swimmers, the Japanese command began to use units of "giretsu kutebutai" - teams of suicide paratroopers. In February 1945, the Japanese dropped a parachute landing on one of the American airfields. Paratroopers, tied with packages of explosives, destroyed seven bombers with them and burned 270,000 liters of gasoline. 112 suicide soldiers died in that battle.

In April 1945, the Americans began aerial mining of the straits and port areas of Japan. One B-29 bomber took on board about 5.5 tons of magnetic and acoustic mines. As a result of mining, the sea movements of the Japanese troops were hampered. The Japanese were forced to divert their aircraft and intensively bomb the minefields, but the shortage of aviation equipment was already showing. The solution was found in the use of small suicide bombers, under which even ordinary boats adapted. This purely Japanese invention was designed to quickly and decisively clear the port waters from American mines. However, the use of the suicide trawling technique did not receive further development: mining turned out to be

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so dense and large-scale that in July the Japanese stopped trawling altogether, because they lost a huge number of ships and human lives.

A variation of "fukuryu" was also used in the Japanese infantry, where suicide soldiers ("no way") used backpack mines. This weapon was simple in design but quite destructive in use, as it consisted of a canvas satchel loaded with approximately 9 kg of explosive. The soldier put this charge on himself and waited until the enemy tank approached him. Then the infantryman jumped out towards the tank and dived under it, at the same time pulling the fuse cord, which, with a slight delay, detonated the charge, while destroying both the tank and the infantryman himself. This tactic, which was used by the Japanese in the Philippines and Okinawa, was difficult to fight, because the anti-personnel defense had to react very quickly to a soldier who rushed to the tank and prevent the attack. The crews of allied tanks were very afraid of “no way”:

A variant of the backpack mine was a type 93 anti-tank mine mounted on a pole, a suicide infantryman simply shoved it under the tank with terrible consequences and for

tank, and for himself. I must say that pole mines were not an invention of the last year of the war. They were used back in China by suicide infantrymen, who went on the offensive ahead of the attacking Japanese units and sacrificed themselves, making explosions in the Chinese field fortifications, hiding in a dense network of trenches, barbed wire and communications.

The Allies encountered a further modification of this suicidal weapon in certain areas of Burma in 1945. Here, Japanese anti-tank fighter detachments hid in rifle cells, in ditches or specially dug holes near the roads (the so-called "fox holes"), along which Allied tanks were supposed to advance. Sitting in cover, the suicide infantryman patiently waited for the approach of the tank, and as soon as the tank was close, the infantryman detonated the charge: it could be a simple explosive

. a device, or a mine, or sometimes even an aerial bomb. The charges were often handcrafted by the suicide candidate himself. However, in practice, this method of attack has

It was ineffective, because the suicide bomber sitting in the pit was easily detected by the escort infantry, and since he had no other weapon, he was destroyed slowly.

At the end of 1944, a decree was issued in Japan, according to which “all men between the ages of 14 and 61 and all unmarried women between 17 and 41 were obliged, under pain of imprisonment, to enroll in military service” . Then came the "Manual for resisting the enemy." According to this manual, the civilian population was organized into detachments that did not have military uniforms, only armbands testified to the status of a fighter. Soldiers studied warfare with primitive guns

(one per ten people), swords, bamboo spears, axes, sickles and other agricultural tools. Even longbows were used. Empty bottles for incendiary mixtures and "poison grenades" filled with hydrocyanic acid were collected everywhere. Local artisans produced "flying mines", "bag charges" and wooden cannons that could be fired only once, as well as disposable smoothbore guns and primitive pistols that fired steel bars. | _. Those who did not have any weapons at all were advised to practice martial arts, judo and karate. Women were taught to kick in the groin. Everywhere hung the same slogan:

.· "One hundred million will die in the name of the emperor and the nation." Must-

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the ability to “sacrifice oneself with courage and courage in the name of the state”, the needs and well-being of which were considered higher than any rights and values of the individual, was one of the main principles of the “samurai spirit”. It was not considered the prerogative of only men - in wartime, its execution was equally assigned to both women and children. That's why, when for everyone, despite constant government messages. about the great "strategic" victories in the Pacific, it became. It is obvious that soon the enemy will approach the Japanese islands, the absolute majority of the population took the idea of “fight to the last man” for granted.

When is the prospect before simply unthinkable capitulation

tion began to take on a real shape; military mini

The wisdom of Japan prescribed only one thing: “We must continue the holy war for the preservation of the state and the nation, even if we have nothing to eat but grass and mud, and nowhere to sleep but an open field. If we continue to fight fiercely, we will find a way out of any

provisions (i.e., "we will find life in death"). |

The civilian population also took part in the suicide attacks of the last months of the war. So, for example, on April 21, behind four hundred Japanese soldiers, tied with grenades, women with bamboo spears in their hands went on the attack, some of them carried children behind their backs. When they approached the enemy, the Japanese artillery covered both the attacking Japanese and the defending allies with their volleys.

However, none of the plans of “battle of the samurai nation to the last man” was destined to come true. The clear superiority of the enemy in all respects and the atomic bombings of Hiroshima and Nagasaki convinced the government cabinet and the Supreme Command. that the end has come. On August 14, 1945, the emperor declared that it was impossible to continue the war any longer. He said he considered the American offer to retain imperial power "quite acceptable." The official decision to surrender was made. In a radio address to the nation, which for the first time heard the voice of the "divine sovereign", the emperor admitted that the continuation of the struggle would lead to the complete destruction of the Japanese people. However, not all Japanese wanted to capitulate. Some high-ranking officials committed suicide, as well as thousands of soldiers and officers. The war is over, the “nation of samurai” has capitulated.

25. BATTLE ANIMALS

Although the Second World War is considered to be a fully mechanized war, the warring parties nevertheless used animals in large numbers: horses, mules, elephants, camels, dogs, pigeons, and even bats.

Cavalry

On the eve of the Great Patriotic War, the Red Army had 9 cavalry divisions, 4 mountain cavalry divisions and 7 reserve cavalry regiments. The number of horses in a division at that time was 7,625. In late 1942 and early 1943, the cavalry divisions, which had suffered heavy losses, were replenished with personnel and horses and consolidated into 10 cavalry corps. They successfully operated near Stalingrad, in the North Caucasus, in the operations of the Voronezh, Southwestern, Bryansk and Central fronts. On May 1, 1943, there were 26 divisions (222,816 horses) in the cavalry. In addition, there were entire formations of mounted partisans, for example, Kovpak's army. The cavalry achieved its greatest successes as part of temporary horse-mechanized troupes. In Jan-

In 1945, one of these groups under the command of General

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Lieutenant I. Pliev successfully acted during the liberation of Czechoslovakia, and in August 1945 contributed to the defeat of the Japanese Kwantung Army.

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Cavalrymen also fought as part of the German armed forces: the elite division “Field Marshal von Mackensen”, the 8th SS Cavalry Division “Florian Geyer”, as of April 1943, the 1st Cossack Division, transferred in November 1944 to the command of the Chief SS troops headquarters. The cavalry regiments of the Hungarians, Austrians and Romanians also fought on the side of the Germans.

The Japanese during the war had four cavalry brigades, which were used mainly in China, along with several Mongolian battalions. In Manchuria, the Kwantung Army had a 25,000-strong cavalry,

Upon entering the war, the US Army included several cavalry regiments (16,800 horses), but they were soon replaced by mechanized units. In 1942, the last cavalry unit operated in the Philippines, the 26th Cavalry Regiment RA ppte 5soshv (“Philippine Scouts”), it consisted of 250 horses and 48 pack mules.

The French army had only three cavalry battalions during the war. In the English army, almost all cavalry was replaced before the war with units with armored vehicles. However, several cavalry regiments remained in service in Palestine, and the last campaign in which the British cavalry took part was the liberation of Syria in July 1941.

Pack camels, horses, mules, donkeys, reindeer and elk

Horses, camels, donkeys, mules, reindeer and elk were used during the war to transport weapons, ammunition, medicines, food, the wounded, etc.

Pack and riding camels served in the allied forces in North Africa, Burma, India, China and the southern regions of the USSR. In particular, they brought ammunition and food to units of the 8th British Army, which fought against the German corps of Field Marshal Rommel, and took the wounded out of the combat zone. Riding camels is-.

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were used simply as vehicles, although the French had the Saharan camel corps of General de Ley.

Donkeys and mules became widespread in the armies of the warring parties; they were used not only in Africa and Asia, but also in Southern Europe, in particular in the Mediterranean countries. So, for example, donkeys and mules were “in service” with the armies of Italy and Spain, especially in the Italian mountain infantry units. In 1940-1941. the US Army had 10,000 mules in its units. Mules were indispensable in remote and mountainous areas, where even horses sometimes refused to work. In the Red Army, during the battles in the Crimea and the North Caucasus, hardy donkeys were used not only to transport shells, provisions, logs for dugouts, but also to evacuate the wounded. The relatively miniature size of the donkeys allowed them to easily move through the trenches, which made them almost invulnerable to enemy bullets.

Reindeer were in military service in Finland during the Soviet-Finnish war. More than 100,000 deer were used for patrolling, transporting goods, and also: delivering the wounded to field hospitals. In the Red Army, reindeer were used during the Great Patriotic War on the Karelian front.

“In the forests of Belarus, our partisans used tamed elks to transport weapons and food.

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elephants

Of all the animals used during the war, only the elephant was able to replace the car in the jungles of Southeast Asia. Elephants were used in India and Burma, not only as vehicles, but also for building bridges and paving roads in remote areas where it was impossible to get a tractor, let alone use it. The Germans, who by the end of the war were taking the most severe. savings measures. energy resources, c. In particular gasoline, elephants from the famous Hamburg menagerie were used: for plowing the fields instead of NITI SV ORI Steam like OAT | tractors. .

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pigeons

In 1907, the German engineer Julius Neubronner proposed the use of pigeons for photographic reconnaissance. A miniature camera was put on the bird, which was activated by a time relay during its flight. |

During World War II, more than 3,000 soldiers, 150 officers, and 54,000 pigeons were in the military pigeon service (Magu Reveop Seguise) in the US Army. Pigeons were used in all combat operations, in the ground forces, on submarines, on bombers and in the intelligence service. Pigeons performed their tasks in the most difficult circumstances and in difficult meteorological conditions, as well as at night.

The most famous was the American war pigeon Joe, who took part in military operations in Italy and was awarded a medal by the Mayor of London for bravery in rescuing English soldiers. The advance detachment of the British, breaking into one of the settlements, suddenly lost radio contact with their troops. Then the pigeon Joe was sent from afar with a report regarding their new position. Having flown 40 km in 25 minutes, the pigeon reached the headquarters of the British troops, after which the American bombers took off to support the British advance detachment.

During the war in the United States, under the leadership of B. Skinner, work was underway to create a missile control system using pigeons. Although this idea aroused distrust among the military, but MRES (Manopa! Yuegepse Kezeatsÿ Sotpiye) issued 25,000 dollars for research under the Proges! Riveop (project "Dove"), the project also had another name - Proges! Ogsop (Otsop - ogvapÿs sopÿÿgo]).

The essence of such a control system was as follows. A lens was installed in the nose of the rocket, which transmitted the image to a screen installed in the inner compartment of the rocket. In front of the screen, in which there were evenly distributed electrical contacts of the control system, there was a pigeon trained to peck on the screen a mark representing the target. With its peck, the dove closed the contact on the screen, which caused

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inclination of the missile's rudders at a certain angle and correction of the direction of its flight to the target. As a result of this regulation, the target mark was in the center of the screen, which meant that the missile was flying straight at the target. A variant was worked out when, in order to increase the reliability and accuracy of guidance, three pigeons were simultaneously involved in the control system. Some success was achieved in training, but Skinner's plans to use a pigeon guidance system in the design of the Pelican missile aroused the distrust of the military, and work was soon stopped.

Dogs

In 1927 signal dogs and guard dogs appeared in service with the Red Army, and in the 1930s. studies began on the possibility of using demolition dogs. In the winter of 1934/35,

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testing dogs trained for sabotage purposes. The dogs were dropped from the plane in special containers with parachutes, after which they had to deliver the explosives, which were in the saddles on their backs, to fuel tanks, to the railway track or to the "enemy" aircraft. The saddle had a mechanism for influencing the pins, with the help of which the dog was freed from the saddle, dropped it and ran away.

As a result of the exercises, it was concluded that the dog training program is suitable for performing the following acts of sabotage behind enemy lines:

— blowing up certain sections of railway bridges and railway tracks, various structures, armored vehicles, etc. d.;

— arson of buildings, warehouses, storages of liquid combustible substances, oil fields, railway stations, premises of headquarters and government institutions;

- poisoning by dropping containers with poisonous substances in reservoirs,
livestock and terrain.

During the Soviet-Finnish war, dogs of communication and sledding and sanitary service were used. In the conditions of the wooded and swampy terrain, dog teams were the only

transport for the evacuation of seriously wounded soldiers from the front line. For the first time, dogs were used to hunt Finnish cuckoo snipers. For this purpose, hunting huskies were used, which successfully detected the sniper and contributed to his neutralization.

In August 1941, the Central Military School of Service Dog Breeding began to form:
detachments of dogs - tank destroyers. The detachment included four companies of 126 dogs each. After the use of the 1st detachment near Moscow in the zone of operation of the 30th army in the Klin direction, the commander of this army, Major General D. Lelyushenko, reported that “the army needs anti-tank dogs, and it is necessary to train more of them.” In July 1942, the composition of individual detachments was reduced to two companies, which made it possible to increase their number and facilitate management. The 28th separate detachment in the battles near Stalingrad destroyed 42 tanks and 2 armored vehicles. The detachments also included anti-tank crews - 3-4 per platoon of exterminator dogs. In June 1943, on the basis of the detachments, separate battalions of mine-detecting dogs and tank destroyers (06- Smith) were created, each battalion included two companies - a company of mine detectors and a company of fighters. |

Tank-destroyer dogs were specially trained to throw themselves under the bottom of tanks, while being taught not to be frightened by explosions and the sound of gunshots. A pack with a charge of 2-4.6 kg of TNT and a simple sensitive fuse was attached to the back of the dog. A special pin, resting against the body of the tank, deviated and pulled out the safety pin of the fuse, so that the explosion occurred under the bottom of the tank. The dog was launched under the tank from a distance of 75-100 m. In winter, white camouflage horsecloths were put on the dogs so that they could secretly get to the tanks. Positions for launching dogs were being prepared next to the shooting positions. Dog handlers were armed with machine guns and grenades to destroy enemy tanks and manpower and fought as foot soldiers. 27th: Obsmith released 17 dogs in one of the battles, of which 2 were killed on the way, and 15 reached enemy vehicles - as a result, 11 tanks were blown up. In total, the Central School of Service Dog Breeding has formed. 2 separate regiments: 68. Branches of UNITS: a basan of lions and a mouth of dogs. balea porn ai je n

However, it soon became clear that the method of training fighter dogs had shortcomings. One of them was that during the training the dogs were lured under the tank with food. But for most dogs, the familiar smells and dimensions of the space under a Soviet tank during training were very different from those of German tanks during combat operations. Thus, during combat, some dogs, once released with explosives, often preferred their tanks to the Germans, with obvious consequences. The second drawback was

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that the Germans, who quickly learned the technique of using Soviet fighter dogs, spread rumors among their troops that all dogs used by the Russians were ill with rabies. In this regard, it was ordered to shoot all the dogs found. This caused the dogs to disappear all along the Soviet-German front within a short period of time. Among other shortcomings of this

· Methods can be called the duration of training, the cost of maintenance, the need to shoot "missed" dogs (which involved regular snipers), since they already posed a danger to their own troops.

“The tank destroyer dog units were abolished in October 1943. During the Great Patriotic War, more than 300 tanks, self-propelled guns and armored vehicles were destroyed by dogs. Although these losses of the enemy are relatively small, but if we take into account that they fell on the most difficult periods of the war for the Red Army - the defense of Moscow and Stalingrad, then their significance increases.

After 1943, on the fronts, priority was given to units of dogs of the mine-detecting and driving sanitary services. It was necessary to clear the liberated territories of the Soviet Union from minefields, and later the territories of European countries. In 1943 alone, more than 4,000 mine detection dogs were trained, and in total, more than 15,000 dogs searched for mines on the fields of the Great Patriotic War.

According to the Central Archive of the Ministry of Defense of the Russian Federation, during the Great Patriotic War, over 4 million mines were discovered by dogs, over 680,000 wounded were taken out, delivered. over 400,000 reports and service packages were sent, over 78,000 km of communication cables were unwound.

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in the United States in the 1920s and 1930s. the capabilities of military dogs were largely forgotten. Therefore, after the US entered the war, the only military dogs were fifty sled dogs in the state of Alaska. There were also forty dogs received in early 1941 from the Antarctic expedition of Admiral Byrd. A small group of dogs were in California at the coastal artillery guard dog training schools.

In January 1942, the American Kennel Association and a new group calling itself Pos Bog Oergense ("Dogs for Defense") launched a mobilization campaign for the Quartermaster Corps of the Army (Agshtu'5 Ozhapegtachzheg Sogr - OMS). Animals were supposed to be purchased from the patriotic public and trained in nurseries under the control of Pomers Eog Versence, and then distributed to where they were most needed. March 13, 1942 is considered the official start date for the military service of dogs in the US Army.

In July 1942, US Army Headquarters announced plans to train reconnaissance, liaison, and sled dogs for the 10th Mountain Division, after which the first eleven dogs were sent in November for testing at Camp Hale, Coporado State. Soon, a second request came from the army to train specially selected dogs in delivering emergency messages, laying wire lines, delivering packages of documents, providing first aid, reconnaissance, guard duty and tracking work.

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The Minister of War soon ordered the MLA to expand its military dog training programs to include dog training in four categories: guard dogs, patrol dogs, liaison dogs, and mine detecting dogs. It was also ordered to include in the program the training of dogs for mobile patrols (auto-patrols) and sled dogs for sleds. Guard dogs were to be trained to guard airfields. The functions of the OMC expanded in the autumn of 1942 when the corps was made responsible for training dogs for the Navy, Marines and Coast Guard.

In 1942-1943. More than thirty breeds of dogs were trained. However, by the autumn of 1944, the number of breeds being trained was reduced.

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Puppies up to seven: German Shepherds, Belgian Shepherds, Doberman Pinschers, Collies, Siberian Huskies, Alaskan Malamutes and Eskimo Dogs. According to the requirements, the animals had to have the following colors: neutral gray, black, tan or salt and pepper: Dogs with extensive white or other color spots were rejected as too conspicuous.

The first of the OMS training centers was opened in August 1942 in Blue Ridge Mountains, Virginia. Three other centers opened in late 1942: one at Fort Robinson, Nebraska, another at Camp Rimini, Montana, and a third at San Carlos, California. Another center was opened in April 1943 in Cap Island, Mississippi, and was used for jungle warfare training. The Marines maintained a training center at Camp Laune in North Carolina, and the Coast Guard, training only guard dogs, had three kennels on the East Coast and several more kennels on the West Coast.

Small temporary training centers for mine detecting dogs have been established at Fort Washington, Msri Land, Beltsville, Maryland, and Fort Belvoir, Virginia. This program was later transferred to San Carlos, California. One of the centers was located near Honolulu (Hawaii). All of these centers, except for one at Fort Robinson, were closed by the end of 1944.

Germany after the end of the First World War, despite the economic and political turmoil, continued to train military and police dogs. In the mid-30s. a large training center was organized near Frankfurt, which was engaged in breeding and training military dogs. In addition to its own breeding, this training center was also engaged in the purchase of dogs from private breeders. By the end of 1941, by some estimates, the Germans had trained 200,000 military and police dogs. They also provided training for 25,000 war dogs for their allies, the Japanese, who used them against the Chinese:

In the 20s. German dog breeders introduced a standard for wolf-like dogs, while white shepherds

removed from the breeding program. In 1933, the German Kennel Club officially banned the breeding and registration of white dogs. The Nazis used German Shepherds extensively for military purposes during the war, but their losses were so great that the breed was almost wiped out in Europe by the end of the war.

In 1939, a decision was made to prepare the remaining White Shepherds for special purposes. So, in the training center in Roentgental near Berlin in 1941-1942. these dogs were trained for use in covert operations by the German army. By the end of 1942, the dogs were ready and they were secretly sent on a Ju 52 aircraft to North Africa at the disposal of the German Afrika Korps (Reshvse5 AJOKa Kogrz - RAK). At this time, in Tunisia, the battle between the Allied forces on the one hand, and the German and Italian troops on the other hand, was going on with great success.

, Then the incident occurred, about which on March 1, 1943 Tite wrote. American intelligence group As part of a lieutenant and two sergeants, she received the task of scouting enemy positions near the village of Osseltia. After: the scouts had completed their mission and were already returning to their positions, they suddenly saw a white dog about 15 m in front of them. She did not growl in warning, as an ordinary guard dog would do, on the contrary, she stood motionless, like a statue, as if with all her tense posture she pointed to the INC scouts. | A few minutes later, the legs of one of the sergeants were killed by enemy sniper fire. His comrades were forced to leave the wounded, and themselves, reaching the positions of their troops and reporting what had happened, immediately took help and went back to pick up the wounded. When under-. on the way to the same village they again saw the white one. dog chasing them. When

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the sergeant raised his rifle to aim at the dog, which reacted like a well-trained man: lay on its stomach and rolled into a narrow hollow, disappearing from the view of the Americans .. Rescue team, reaching the place where the wounded sergeant had been left; didn't find it. : Onrvidvo, but led to the wounded. Germans .. : ·:::: ÿ ÿ

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White dogs have been repeatedly observed near Osseltia. There they roamed in packs of three or four dogs in the vicinity of the British and American positions, then heading towards the positions of the German troops. Apparently, the German snipers used them to locate and destroy the enemy. By the end of the African campaign, the Germans and Italians were forced to abandon most of their dogs, abandoning them during their rapid retreat into the deserts of North Africa, but the white dogs were taken out by plane.

The bats

A month after the US entered the war, Dr. L. Adams turned to the White House with a proposal to use bats against the Japanese. The essence of the proposal was to equip millions of bats with incendiary bombs and drop them from aircraft. What could be more devastating than such a massive attack on Japanese cities? After careful study, this proposal was transferred to the chemical service of the US Army: (ÿÿÿÿÿÿÿÿ Uapage Zeglse - ÿÿÿ) for further study together with representatives of the army aviation. Dr. Adams and a team of biologists attached to him from the University of California immediately set to work and visited many places where bats were found in large numbers. Bats lived mainly in caves, although large numbers lived in the attics of sheds and buildings, under bridges, and in piles of rubbish. The largest of the examined bats was the whiskered bulldog bat (Eshtor5 rego 5), which, with its own weight of about 65 g, could carry a load weighing up to 200 g. However, as the team determined, they were found in insufficient numbers for the military. application quantities. An Anthoros rush mouse, found in large numbers, could carry a load weighing 85 g, but biologists, as a result of research, came to the conclusion that it was not hardy enough. In the end, they settled on the Brazilian fold-lipped bat (Tadaida bgas en techisana), which, with its own weight of about 10 g, could fly

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with a load weighing up to 30 g. The largest colony of mice of this breed lived in the Ney cave near the town of Bandera, Texas, their number was approximately 20-30 million individuals. The colony was so large that, according to experts from C\b, "it takes about five hours for all these mice to fly out of the cave in a dense stream with a diameter of 4.5 m."

The caught batch of bats was placed in cages, the cages were transported in a refrigerator truck. Cooling the mice during transport was necessary to reduce their activity. Dr. Adams took some bats to Washington and then released them at the War Department building to demonstrate to army officials how the bats could carry a bomb. In March 1943, an assignment was received from the Air Staff to study a special method for dispersing incendiary bombs. The purpose of this study was to determine the possibility of using bats to carry small incendiary bombs to enemy targets. It was assumed that ten B-24 bombers would fly from Alaska to bomb the industrial areas of Japan, each plane was supposed to carry several hundred containers of mice. Four factors favored the use of bomber mice:

- their large number (for example, only in four caves of Texas there were several million individuals);

- the ability to carry a large load in flight (females carried two cubs each);

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- bats at low temperatures (below 5 ° C) fell into a state of hibernation and did not require food;

- mice, flying in the dark, hid in secluded places by morning (often in the attics of various buildings), hiding from daylight.

The habits of bats have come under scrutiny. In the meantime, Dr. L. Fisser of the National Research Committee of the Department of Defense (MOKS—Manopa! Repze Kezeagsÿ Sochii ee) began to develop the design of a miniature bomb that could be carried by a bat. The prototype of such a bomb

changed by the British during the First World War. It was an incendiary bomb Babu incendiary ("little firebomb") weighing only about 180 g, filled with a special thermite mixture.

Dr. Fisser developed two types of incendiary bombs for experiments with bomber bats. One version of the bomb weighed 17 gi and could form a flame 25 cm long for four minutes. Another version weighed 28 gi had to burn for six minutes with the formation of a flame 30 cm long. kerosene.

A small time-delayed igniter was attached to one side of the bomb. The basis of the igniter was a striker pin held in the cocked state by a thin steel wire. In order to initiate the explosive mechanism of the bomb, it was necessary to pour a small amount of copper chloride solution into the igniter. After a certain time, copper chloride completely corroded the wire, after which the released pin struck the primer and ignited the kerosene.

A miniature surgical clamp was attached to the skin of the bat's chest, from which a bomb was suspended on a short thread. A mouse equipped in this way was placed in a cardboard container, in which about 40 prepared individuals could be placed. Dropped from a height of 1500 m, the container was parachuted down to a height of 300 m and automatically opened, after which the bats flew to the nearest dwelling or other buildings, hid in attics, gnawed through the thread and left bombs that ignited after a certain time.

In May 1943, about 3,500 bats were collected, placed in refrigerated trucks and transported for testing to Muroc Lake, California, and on May 21, five test drops of bats were made. Containers with mice equipped with a mock version of the bomb were dropped from a V-25 aircraft at an altitude of 1500 m. from hitting the ground when falling:

The research team was transferred a few days later to an Army Aviation unit based at Carlsball Air Force Base, New Mexico. Fifty freshly caught bats were transported by truck to the airfield in a chilled state. The procedure for preparing mice for bombardment was as follows. Each mouse was taken by a biologist and a clip was carefully attached to its skin. At the same time, the second member of the research team injected the copper chloride solution through a special hole into the mechanism of the bomb, the third sealed this hole with wax, and the fourth attached the bomb to the clamp with a short thread. After that, the equipped mouse was put into the container. Containers were dropped from B-25 and 1-4 aircraft.

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Army tests were suspended on May 29, 1943, by which time the following statistics had been obtained. A bat weighing an average of 9 g could easily carry an 11 g bomb and satisfactorily carried an 18 g bomb, but a 22 g bomb was too heavy for it. The next series of tests lasted until June 8, dropping over a purpose-built village simulating a Japanese settlement. However, during the tests, an incident occurred - mice, looking for a secluded place for daytime sleep, burned several buildings of the test site, after which they settled down to sleep under a fuel tank.

As a result of the tests, it was recommended to improve the time delay system for the parachute of the dropped container, to develop new design clips for mice, as well as a new design igniter for the bomb. In addition, it was recommended to study the behavior of mice during inactivity caused by artificial cooling. Soon the army handed over the project to the fleet, where it was given the name Projes! X-Wow.

The Marine Corps, to which the Navy handed over the project, began its first experiments with mice on December 13, 1943. The Corps conducted its main tests at El Centro, California, but a few tests were conducted at a test site in Utah, where a mock-up of a Japanese city was built. During the tests, thirty

fires, but only four of them required the services of professional firefighters, so the development of more powerful incendiaries was commissioned. Based on the results of the tests, MOBS issued a conclusion that the use of bats per bomber could be more effective than conventional incendiary weapons - from 3625 to 4748 fires instead of 167-400 fires for conventional incendiary bombs.

The start of full-scale tests of bats - bombers was scheduled for August 1944 with an end at the end of next year. This work schedule did not suit the command of the US Navy, so soon all work on bats was stopped, the total cost of the project at that time was estimated at $ 2 million.

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CONTENT

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The book “Special Weapons of the Second World War” discusses military equipment developed in 1939-1943 for sabotage and reconnaissance operations, ramming and assault attacks, as well as transporting special cargo. These are special fighters, projectiles designed to destroy large ground targets, including manned bomber balloons used by the Japanese to bombard the US Pacific coast; human-guided torpedoes, midget submarines, attack boats, explosive boats, etc. d.

For the first time in the literature, a comparative description of such exotic weapons systems as Soviet and German self-propelled land mines is given. The history of the creation and nature of the combat missions of the Soviet special forces armed with such mines, and the combat use of the latter.

Also described are the combat use of various animal species, including signaling pigeons, tank destroyer dogs, and firebombing bats.

The book includes many color illustrations and photographs. For the first time author's photos of Kazantsev's Soviet self-propelled land torpedo are published.

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